DOES NOT CIRCULATE

Clinical Meeting • Seattle • November 27-30, 1956

This Issue Exceeds 160,000 Copies

THE JOURNAL

OF THE

American Medical Association

JUNE 23, 1956

UNIVERSITY OF MICHIGAN
JUN 28 1956
MEDICAL LIBRARY
C. 2

ORIGINAL ARTICLES

THE FAMILY DOCTOR....671
D. H. Murray, M.D., Napa, Calif.
CARDIOVASCULAR CASE PROGRESS INDEX....673
L. Z. Feigenbaum, M.D., M. S. M. Watts, M.D., and N. C. Thomas, M.A., San Francisco
LABORATORY PROCEDURES AS AN EMOTIONAL STRESS....677
S. M. Kaplan, M.D., Cincinnati
TREATMENT OF ENTEROBIASIS WITH ONE ORAL DOSE OF PROMETHAZINE HYDROCHLORIDE....681
J. L. Avery, M.D., Silver Spring, Md.
ORAL MUCOSAL SMEARS IN DETECTION OF GENETIC SEX....683
R. B. Greenblatt, M.D., O. Mateo de Acosta, M.D., Efraín Vázquez, M.D., and D. F. Mullins Jr., M.D., Augusta, Ga.
PHYSIOLOGICAL APPROACH TO AMBULATION IN PARAPLEGIA....686
E. E. Gordon, M.D., New York
VARIED MANIFESTATIONS OF DISSECTING ANEURYSM OF THE AORTA....689
Samuel Baer, M.D., Philadelphia
SEVERE TOXIC EFFECTS FROM AMINOPHYLLINE AND THEOPHYLLINE SUPPOSITORIES IN CHILDREN....693
A. C. Nolke, M.D., Detroit
MEDICAL EDUCATION BASED ON INTERDEPARTMENTAL COOPERATION....697
J. L. Caughey Jr., M.D., Cleveland
THE UNIVERSITY IN MEDICINE....700
G. T. Harrell Jr., M.D., Gainesville, Fla.
TEACHING THE FAMILY PHYSICIAN'S APPROACH, AS BUILT AROUND GENERAL PRACTITIONERS....705
L. F. Rittelmeyer Jr., M.D., Jackson, Miss.
THE RESIDENT CLINICAL CLERKSHIP—AN EXPERIMENT IN MEDICAL EDUCATION....707
R. E. Snyder, M.D., New York
TEACHING OF FAMILY PHYSICIAN'S APPROACH BY A DEPARTMENT OF PREVENTIVE MEDICINE....711
W. L. Fleming, M.D., Chapel Hill, N. C.
AN ADVISOR (PRECEPTOR) PROGRAM FOR INTERNS AT A GENERAL HOSPITAL....713
Sidney Leibowitz, M.D., New York
ALLERGIC ECZEMATOUS CONTACT DERMATITIS DUE TO METALLIC NICKEL....717
A. A. Fisher, M.D., and Alfred Shapiro, M.D., New York

CLINICAL NOTES

NEW APPARATUS FOR TREATMENT OF PULMONARY EDEMA....721
Hans Seligman, M.D., Groton, N. Y.
MECHANICAL RESPIRATOR FOR NEWBORN INFANTS AND OTHER PATIENTS....723
A. R. Bauer, M.D., Detroit
UNUSUAL SKIN LESIONS ASSOCIATED WITH THROMBOSIS OF SUBCLAVIAN ARTERY....725
M. H. Samitz, M.D., and Samuel Lisker, M.D., Philadelphia
ALOPECIA AREATA DUE TO SYPHILIS....726
H. T. Behrman, M.D., and S. T. Wild, M.D., New York

SPECIAL REPORTS

Council on Foods and Nutrition

CURRENT TRENDS IN THE FEEDING OF INFANTS AND CHILDREN....728
C. A. Smith, M.D., Boston

EDITORIALS

Clinical Lessons Learned in the Morgue..730
P. R. Cannon, M.D.
Dr. David B. Allman—President-Elect...732
Dr. Bierring Receives Distinguished Service Medal....733

ORGANIZATION SECTION

Address of the President Before the House of Delegates....734
Address of President-Elect Before House of Delegates....738
Health Film Catalog for Television....740

REGULAR DEPARTMENTS

Medical News....741
Correction....744
Examinations and Licensure....744
Deaths....745
Foreign Letters:
France: Cirrhosis with Ascites. Postcommissurotomy Syndrome. Gamma Globulin in Prophylaxis of Measles....747
Peru: Mitral Commissurotomy. Sterility. Hypothalamus and Pregnancy....747
United Kingdom: Armed Forces Medical Services. Commission on Marriage and Divorce. Dodging Responsibility. Mortality Caused by Smog....748
Correspondence:
The Autopsy. Australian Urological Meeting. Defibrillation....749
Medical Literature Abstracts....752
Book Reviews....767
Queries and Minor Notes:
Gamma Globulin and the Salk Vaccine. Cause of Paralytic Poliomyelitis. Prophylaxis of Ivy Poisoning. Duodenal Ulcer. Restoring Amputated Portions of Fingers. Corneal Transplantations and Eye Banks. Wood's Light. Sweating Blood. "Hundred Year Old Eggs." Diathermy and Ultrasonic Energy. Boxing. Where to Locate a Peep Sight. Ventral Hernia After Surgery for Empyema. Asthmatic Attacks During Menstruation. Trauma and Reactivation of Tuberculosis. Radioactive Rocks in Living Room. Varicosities of Vulva. Exposure to Fumes of Solvents. Loss of Hair. The Price of New Drugs. Vertigo. Effect of Cortical Compounds on Urinary Corticoids. Relief of Contracture of Paralyzed Limbs. Repeated Erythroblastosis. Fragilitis Ossium. Penicillin on an Empty Stomach. Postpartum Hemorrhage. Insomnia. "This Wormy World." Asthma. Bifocals for Myopic Children. Trophic Ulcers Following Heavy Irradiation....768

WASHINGTON NEWS

National Medical Library. Report of Pan American Sanitary Bureau. "Little Omnibus" Health Bill. Hill-Burton Program. Conference on Aging..Adv. Page 13
National Organizations of Medical Interest....Adv. Page 28
Meetings....Adv. Page 44
From Other Pages....Adv. Page 52
Tonics and Sedatives....Adv. Page 58
Books Received....Adv. Page 90
The Bright Side....Adv. Page 92
Index to Advertisers....Adv. Page 94

Volume 161, No. 8 Published Weekly at 535 North Dearborn Street, Chicago 10, Illinois. Subscription, $15. Single Copy, 45 cents

Gross & Jezer's Treatment of Heart Disease

A brand new book of specific instructions for instituting effective and up-to-the-minute therapy—for every type and degree of heart disorder and disease. Remarkably complete and all-inclusive.

See **SAUNDERS** *Advertisement on next 2 pages*

W. B. Saunders Company

Publishers of

Cecil & Loeb's MEDICINE

•

Nelson's PEDIATRICS

•

Dorland's AMERICAN ILLUSTRATED MEDICAL DICTIONARY

•

CURRENT THERAPY

•

And 264 more fine books for the medical, dental, nursing and allied professions

NEW

Fluhmann's

The Management of Menstrual Disorders

To help you recognize more readily and deal more effectively with the frequent problems of menstruation

Here is a well-rounded and solidly useful account of the reproduction cycle in women—with full details on diagnosis and treatment of the many frustrating menstrual disturbances you meet so frequently.

Comprehensive description and illustration is brought to you on subjects like these: *Premenstrual Tension, Follicle Cysts of Ovary, Membranous Dysmenorrhea, Irregular Shedding of the Endometrium, Basal Temperature Graphs, Vaginal Smears, Clinical Usage of Sex Hormones, List of Available Commercial Preparations, Etc.*

Throughout, consideration has been given to the relationship between menstrual aberrations and nonmenstrual uterine bleeding. Special emphasis has been placed on the specific problems of adolescence and of the climacteric. Where dilatation and curettage, hysterectomy, etc. may be necessary, surgical indications are pointed out. There is much basic information for physicians interested in the problems of infertility.

121 illustrations, charts and graphs condense much of the information into easily grasped segments for quick reference. Each chapter is fully documented with up-to-date references so you may investigate further a particular aspect or problem.

By C. FREDERIC FLUHMANN, B.A., M.D., C.M., Clinical Professor of Obstetrics and Gynecology, Stanford University School of Medicine. 350 pages, 6" x 9", with 121 illustrations. $8.50. *New!*

NEW

Laughlin's

The Neuroses in Clinical Practice

Solid assistance to ease common emotional disturbances

Any physician dealing with the problems of emotional upset will gain through this book a new insight and ability to cope with the common neuroses. The author gives you a clear picture of each disorder by describing clearly: *incidence, pathogenesis, symptoms, clinical features, diagnosis and treatment.*

You will find solid help on problems you can handle in your office—in topics such as these: *Phobias, Anxiety, Depression, Overconcern with Health, Fatigue Reactions, etc.* Well over 200 case histories make the text—which reads as easily as a novel—become even more understandable and valuable in daily practice.

By HENRY P. LAUGHLIN, M.D., Associate Clinical Professor of Psychiatry, George Washington University School of Medicine. 802 pages, 6" x 9". $12.50. *New!*

THE JOURNAL of the American Medical Association is published weekly by the American Medical Association. Subscription price, $15.00 a year, 45c a copy. Canadian $17.00. Foreign $21.50. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under act of March 3, 1879. Address all communications to American Medical Association, 535 N. Dearborn St., Chicago 10, Illinois

THE JOURNAL
of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 161, NO. 8 — CHICAGO, ILLINOIS — JUNE 23, 1956
COPYRIGHT, 1956, BY AMERICAN MEDICAL ASSOCIATION

THE FAMILY DOCTOR

PRESIDENT'S ADDRESS

Dwight H. Murray, M.D., Napa, Calif.

In humbly accepting this high professional position as President of the American Medical Association, I look upon this office as a personal honor to me, and, even more so, I look upon it as a tribute to the nation's family doctors. For more than 35 years I have been a general practitioner in a small California city. I have served thousands of families in the Napa Valley during this time. When they could not come to me, I have gone to them, day or night. Like thousands of my colleagues in general practice, I have gotten to know many of them intimately. I deem it a privilege to have had the opportunity of serving their medical needs, and I am convinced that I would be welcomed into their homes as a friend.

The role of the general practitioner is to be envied rather than revered, and today many constructive efforts are being made to stimulate increased interest in general medicine among medical students and young physicians. A growing number of medical schools are revising their curriculums so they can give students better-rounded, better-coordinated preparation for the practice of medicine. Most of these new programs, in one way or another, are designed to give well-integrated, practical training in the care of the individual and the family—regardless of whether the young physician intends to specialize later on. More and more hospitals are establishing residency training programs in the field of general practice. And the House of Delegates of the American Medical Association, by official action taken last December in Boston, has urged all medical schools to form departments of general practice and all community or general hospitals to give proper staff recognition to competent general practitioners in keeping with their merits and demonstrated ability.

Meanwhile, through the American Medical Association and state medical society placement programs, through scholarship and loan programs for medical students, and through cooperation with local communities, hundreds of doctors have been placed in small towns and rural areas that need them and can support them. Most of that doctor-placement activity has involved general practitioners. At the same time, however, there also has been an equally necessary and desirable development with respect to specialists. A recent survey indicates that over the past 10 years there has been a substantial increase in the proportion of specialists entering practice in the smaller communities. During the same period of time, another vital development has been taking place. Through sound, well-directed government efforts and through intensified private initiative—and in many cases a combination of the two—great progress has been made in establishing hospitals, clinics, up-to-date physicians' offices, and other medical facilities in smaller cities and towns. This is a continuing process that undoubtedly will be accelerated in the years ahead.

The medical profession also is devoting more and more attention and effort to the field of postgraduate medical education. The purpose of this work is to expand, improve, modernize, and coordinate the various means of keeping physicians abreast of scientific advances. The ultimate objective is to give all physicians, everywhere in the nation, ample opportunities to gain a rounded, correlated view of the newest medical developments.

Two Basic Concepts

All of these activities of the American Medical Association are part of a general trend that, in my opinion, represents a healthy decentralization, a wider diversification, a better distribution, and a closer coordination of medical personnel, knowledge, and services. Among the many factors underlying this trend are two basic concepts—two important ideas—that I should like to emphasize. They involve both physicians and patients, and I hope that both the medical profession and the public will give them some hard thought in the times ahead.

The first of these is the concept that modern medical care must be looked upon as a matter of teamwork. There is a growing conviction in medical circles that both physicians and patients need a clearer picture, a better appreciation, of the part played by every member of the medical team. In this view, no particular type of physician—whether he be a general practitioner, a surgeon, or a medical specialist—should be considered the

Read before the 105th Annual Meeting of the American Medical Association, Chicago, June 12, 1956.

"golden boy," the all-American, entitled to the lion's share of prestige and reward. Modern medical care is a complex service requiring the coordinated efforts of family doctors, all kinds of specialists, chemists, pharmacists, researchers, laboratory and x-ray technicians, nurses, dietitians, and many other groups of auxiliary personnel. All must rightly be considered a part of the medical care team. In short, every member of this team —assuming of course that he is qualified, competent, and ethical—should be considered a person "worthy of his hire"—not simply in the financial sense, but also in terms of professional recognition and public appreciation.

The second major influence in the background is a sincere desire to restore the close personal relationship that once existed between doctors and patients. This desire, I am convinced, is shared by both the medical profession and the public. The rapid, bewildering scientific advances of recent decades have brought remarkable medical progress. Yet, in the opinion of many, they also have tended to make medical care somewhat cold, brisk, and impersonal. Both doctors and patients, as a result, have sensed a loss of individuality. They miss that feeling of warmth and understanding that is a vital ingredient in the art of medicine. Our mutual task—both physicians and the public—is to regain our individuality. To do so, we must humanize and personalize the practice of modern medicine. Such action is imperative, in my opinion, because the public wants it, we doctors want it, and medical care is not complete without it.

In the second place, the very teamwork and coordination that I already mentioned require careful attention to these personal factors. No matter how complex or specialized medicine may become in the decades ahead, and no matter what may be the predominant pattern of medical practice—individual physicians, medical groups, health centers, or hospital outpatient clinics—there always will have to be the equivalent of the family doctor. Possibly at some future date he will be called a health coordinator. Regardless of terminology, there always will have to be that first doctor for the patient to consult about his health problems. There must be a competent, well-rounded physician to see and know the patient as an individual, to get the complete picture of his physical and mental health, to guide him toward the necessary tests and specialists, to coordinate his program of treatment, and to follow up after recovery.

Finally, the results of medical progress during the past half-century actually dictate that we reemphasize the personal element in medical care. At the turn of the century, only half of our people lived beyond the age of 30. Today, more than half live beyond the age of 66. Consequently, one of the major tasks now taking shape is to conquer or control the chronic ailments and the other diseases that are most prevalent during adult life. But in the vast majority of such cases—on the basis of present medical knowledge—there may be no quick, simple cure, such as an antibiotic, a surgical operation, or a session under the x-ray machine. In many cases there may have to be careful, prolonged medication or other treatment—close control of the patient's entire physical condition, strict regulation of diet and living habits, and continuing attention to mental and emotional outlook. The increased interest in the health of older people, therefore, gives still another compelling reason to think about the human side of medicine.

Some Practical Suggestions

So, with both the present and the future in mind, I would like to offer a few suggestions that I think would be of value to the medical profession and to the public. What we need most in medicine today is to find some way of combining modern scientific methods with the personal, friendly touch of the old-time family doctor. He carried only a few medicines in his battered black bag, but in his heart he brought sympathy and personal concern. Today, physicians have a tremendous store of knowledge, skills, facilities, and drugs. But we have learned that skill and the prescription pad are no substitutes for kindness and understanding. We also have learned that fear and anxiety are important factors in all types of illness. People fear the unknown, the unexpected, the unplanned sickness. And these emotional stresses that accompany physical illness should concern the doctor equally as much as the disease itself. He must treat the whole person.

We physicians, therefore, should try to arrange our working schedules so that we can give a little more time to each patient—take more personal interest in his troubles and problems, talk to him frankly about his illness or condition, explain as clearly as we can all the possible or potential costs that might be involved in his particular case, and, above all, be friendly, patient, and sympathetic. To our patients, I would like to emphasize this: No doctor is a miracle man. All the advancements of science cannot make a sick man well unless he tries to cooperate with his physician. So, choose your doctor carefully, have faith in his ability, follow his instructions, and give him a fair chance to show that he can help you.

Working together — understanding one another's problems — we have ahead of us a golden era of progress, in medicine and all other aspects of our national life. We shall achieve it if we protect and preserve the American atmosphere of freedom, initiative, and cooperative effort. With God's help, may I contribute my share to that great cause — for the mutual benefit of my profession and my fellow Americans.

Thumbsucking.—Extranutritional sucking is common in healthy and contented babies in whom it is not inhibited. In babies whose feeding situations are satisfying ones, gratification strengthens the sucking. This source of gratification is carried over to extra periods apart from feeding. Thus the infant may learn to relive a pleasant, dependent situation independent of the parent figure by reproducing the sucking. A resourceful baby learns to alleviate his inner needs and frustrations by substituting this pleasurable act for situations where comfort depends upon the environment. Several authors have suggested that strengthening this activity in infancy serves to encourage the growth of independence in the infant. . . . Seventy healthy, apparently happy babies were studied in an attempt to evaluate the common occurrence of extranutritional sucking and its importance. Sixty-one manifested an appreciable amount of extra sucking which seemed to be gratifying in itself to the infant and which did not necessarily represent fatigue, hunger or discomfort. The onset of this varied from birth to 3 months of age. Its intensity increased until 7 months then began to decrease spontaneously, co-incident with other motor accomplishments. By 12 months all but 4 of these babies had ceased to suck their hands except under stress. Only 2 have continued beyond the age of 2.—T. B. Brazelton, M.D., Sucking in Infancy, *Pediatrics*, March, 1956.

CARDIOVASCULAR CASE PROGRESS INDEX

METHOD OF CLASSIFYING CHRONIC DISEASES, WITH MECHANISM OF LONG-TERM FOLLOW-UP AND A PRELIMINARY REPORT OF THE FIRST FIFTEEN HUNDRED CASES

Lawrence Z. Feigenbaum, M.D., Malcolm S. M. Watts, M.D.
and
Nancy C. Thomas, M.A., San Francisco

• *The course of chronic disease must be studied by long-term observation of individual patients. The course of heart disease was studied in 1,500 patients who had been registered for the purpose by the house and visiting staffs of a hospital.*

Mechanical problems of registration and indexing were readily solved. Special problems arose from the need of following up the same patients for many years; some of these were the relation of the patient to the index, the relation of the physician to both, the maintaining of contact, and the ultimate securing of autopsy reports. So far, only 1% of the patients have been lost to contact, and autopsy data have been obtained from 60% of those who have died.

The use of punch cards has made it possible to make quick sortings according to place of registration, type of patient, and occupation. The largest etiological category has been that of congenital heart disease. Another sorting showed that 6.4% of the patients with peripheral vascular disease had symptoms of coronary artery disease. It has been possible to select groups of patients by any desired criterion for special study.

The increasing recognition of chronic disease as a cause of death and disability has focused attention on some of the special difficulties inherent in research in this field. Chronic diseases are, in general, characterized by exacerbations, remissions, and complications occurring over a span of many years. The natural history of these conditions is difficult to document. The prognosis in untreated cases and the prognosis as affected by various methods of therapy is hard to measure. The importance of various symptoms and findings and the worth of specialized diagnostic techniques are hard to evaluate. Improvement in the understanding and the treatment of chronic disease depends to a large extent on the solution of these problems.

An important deterrent to the accurate long-range study of chronic disease has been the difficulty in following the progress of enough patients for a sufficiently long time. Of the relatively few valuable studies reported in the literature, almost all are monuments to the persistent devotion of a single person over a period of many years. More frequently, potentially worthwhile studies never come to fruition because of discouraging results in follow-up or because of a change of interest of the person who initiated the study. As research effort in the field of chronic disease is increased, better methods must be developed to follow the long-term progress of cases of chronic disease. It will be most advantageous to develop systems that are independent of the special interest of any single person. Such planning will result in the accumulation of a large mass of factual data that may be made available to research workers of many interests. At the University of California Medical Center, where special interest is directed to chronic cardiovascular disease, the cardiovascular case progress index has been developed to meet this need.

Cardiovascular Case Progress Index

The cardiovascular case progress index consists of a register of cases of cardiovascular diseases that have been seen at the University of California Medical Center. It includes a listing of diagnostic and therapeutic procedures, as well as certain specified manifestations of cardiovascular disease. A mechanism is provided for the long-term follow-up of the listed patients until death.

The index, developed by physicians and surgeons on the faculty of the school of medicine, was formally established under the auspices of an interdepartmental board whose members were interested in various aspects of cardiovascular disease. It is capable of supplying patients for many day-to-day teaching needs. In addition, the index can provide significant numbers of carefully followed patients with various types of cardiovascular disease and various manifestations of these conditions for many research purposes. Further, it undertakes to follow the long-term progress of any group of patients who have been particularly studied.

From the Department of Medicine, University of California School of Medicine.

This study was supported by a Cardiovascular Training Grant from the National Heart Institute, National Institutes of Health, Public Health Service.

Some Problems in Long-Term Follow-Up of Patients

In most hospitals and teaching centers, a record is kept of the diagnosis that was noted on the patient's discharge sheet. In many instances the diagnosis that was made in the outpatient department is also recorded. Since these diagnoses are usually listed in the record room file, it is often possible to procure a list of all the patients who have been given any particular diagnosis during a specified period. The hospital or outpatient records of these patients may then be reviewed for research purposes. This procedure leaves much to be desired from the standpoint of collecting accurate data on the natural history of chronic disease, particularly as it is affected by diagnostic and therapeutic procedures. No provision is made to follow the future progress of patients who have been diagnosed and treated. An incorrect diagnosis often remains unchanged on the patient's chart and consequently in the record room listing. Additional diagnoses are frequently not recorded. In a large teaching center, many patients are seen on only one or

two occasions in consultation and are referred to their personal physicians for treatment and follow-up. There may be no notation of the ultimate outcome. Many important manifestations, such as symptoms and laboratory findings, are not registered on the discharge sheet or in the record room.

ture of Diseases and Operations (ed. 4). In addition to the usual information concerning the vital statistics in each case, the sheet includes a check list, coded by number, under each of the following five headings: etiology of diagnosis, manifestations, associated disorders, diagnostic procedures, and therapeutic procedures. A space is provided to check the recommended frequency of follow-up examinations, whether every three months, six months, or one year. The usefulness of the index depends to a large extent on the cooperation of the registering physicians. The physicians of our staff, in general, have proved conscientious and accurate in filling out the registration sheets.

UNIVERSITY OF CALIFORNIA HOSPITAL
CARDIOVASCULAR CASE PROGRESS INDEX

Registration No. 30001
Date of Reg. 1/4/53

REGISTRATION SHEET

Name of patient Doe, John, jr. Unit No 22 0000 Registering physician S.S. Smith

Diagnosis (specify if probable or unknown)	4th Ed. Std. Nom. No.	Date of diagnosis*
Tetralogy of Fallot	413-0 x 0	2/15/51

Frequency of follow-up for purpose of Index: 3 months..... 6 months..... annual X

If this patient is included in a special study group (recognized by the Cardiovascular Board for purposes of this registration) please identify investigation by name Congenital Heart Study Group

Check as many of the items listed below as apply to this patient.

check	code	Etiology of above diagnosis
☐	1	Arteriosclerosis—atherosclerosis
☐	2	Bacterial infection
☐	3	Other infections
☐	4	Collagen (define)
☒	5	Congenital
☐	6	Hypertension
☐	7	Hyperthyroidism
☐	8	Hypothyroidism
☐	9	Neoplasm
☐	10	Neurocirculatory asthenia or other neurogenic influence
☐	11	Pulmonary arterial hypertension
☐	12	Reflex disturbance of heart
☐	13	Renal
☐	14	Rheumatic
☐	15	Syphilis
☐	16	Thromboangiitis obliterans
☐	17	Trauma
☐	18	Other etiological factors
☐	19	Unknown
		Special Etiologies for use in Peripheral Vascular disorders
☐	20	Embolism to pulmonary artery
☐	21	Embolism to systemic artery
☐	22	Thrombosis, cause unknown

check	code	Manifestations of above diagnosis
☐	1	Auscultatory phenomena:
☐		Bruit (specify site)
☐		Murmur, diastolic
☒		Murmur, systolic
☐		Other (specify)
	2	Cardiac functional capacity:
☒		Class I
☐		Class II
☐		Class III
☐		Class IV
	3	Cardiac insufficiency (heart failure):
☐		Right
☐		Left
☐		Combined
☐		Right succeeding left
	4	Coronary insufficiency:
☐		Angina on effort
☐		Prolonged pain
☐		Myocardial infarction
	5	Dilatation or hypertrophy:
☐		Left ventricle
☐		Left auricle
☒		Right ventricle
☐		Right auricle
	6	Valvular dysfunction:
☐		Aortic
☐		Mitral
☒		Pulmonic
☐		Tricuspid
	7	Vascular accident:
☐		Embolism
☐		Thrombosis
☐		Hemorrhage
☐		Spasm
☐		Occlusion, artery
☐		Occlusion, vein
		Site of above:

check	code	Associated disorders
☐	8	Adams-Stokes syndrome
☐	9	Anemia
☐	10	Arrhythmia
☐	11	Atrophy, necrosis, or gangrene
☐	12	Carotid sinus syndrome
☐	13	Claudication
☒	14	Cyanosis
☐	15	Disturbance of consciousness
☐	16	Edema
☐	17	Electrolyte disturbance
☐	18	Eyeground changes (K-W III only)
☐	19	Hypertension (secondary)
☐	20	Increased intracranial pressure
☐	21	Ischemic neuritis
☐	22	Neurovascular pain syndrome
☐	23	Papilledema (K-W IV)
☒	24	Polycythemia
☐	25	Renal insufficiency (include uremia)
☐	26	Rest pain
☐	27	Tamponade
☐	28	Other cardiovascular manifestation (specify)

check	code	Diagnostic procedures
☐	1	Angiography
☐	2	Biopsy
☒	3	Cardiac catheterization
☐	4	Cineangiography
☐	5	Nerve block
☐	6	Photography
☐	7	Psychiatric evaluation
☐	8	Pulmonary function tests
☐	9	Studies by Peripheral Vascular Laboratory
☐	10	Study for pheochromocytoma
☐	11	Extensive study
		Therapeutic procedures
☐	1	Blood and blood substitutes
	2	Drugs:
☐		Anticoagulant
☐		Antihypertensive
☐		Quinidine
☐		Vasoconstrictor
☐		Vasodilator
☐		Other (specify)
☒	3	Operation (specify) Blalock Procedure
	4	Regulation:
☐		Caloric
☐		Lipid
☐		Protein
☐		Sodium
☐		Other electrolyte (specify)

(Not to be filled in by physician)

Clinic or ward Pediatrics Clinic Service Pediatrics
Address 100 Main Street, San Francisco, Calif. Telephone Main 1-1100
Friend Parents: John and Mary, address above
Date of birth 12/47 Age at initial diagnosis 4 Sex: M. X F. Race: W. X N. Other
Occupation None T.P. T.C. S.S. Project No

* Record date of patient's first admission (whether teaching or private case) on which the diagnosis was first made.

Fig. 1.—Registration sheet.

Operation of the Index

Registration of Cases.—Members of the house staff and the visiting staff are requested to register all patients with cardiovascular disease who are seen in either the hospital or the outpatient department. This is accomplished by filling out a registration sheet (fig. 1) with the pertinent information to be coded in the index. The diagnosis is listed according to the Standard Nomenclature of Diseases and Operations (ed. 4). In addition to the usual information concerning the vital statistics in each case, the sheet includes a check list, coded by number, under each of the following five headings: etiology of diagnosis, manifestations, associated disorders, diagnostic procedures, and therapeutic procedures. A space is provided to check the recommended frequency of follow-up examinations, whether every three months, six months, or one year. The usefulness of the index depends to a large extent on the cooperation of the registering physicians. The physicians of our staff, in general, have proved conscientious and accurate in filling out the registration sheets.

Classification of Data.—A summary of all the information on the registration sheet is transferred to the Wheeldex, a circular index containing 3 by 5 in. cards mounted on a revolving wheel. The patient's vital statistics, diagnosis according to the Standard Nomenclature of Diseases and Operations, and the items checked on the registration sheet under the five headings are coded on separate cards on the wheel (fig. 2).

Method of Long-Term Follow-up.—Follow-up information on patients who are under the care of the teaching clinic is obtained at the time of their regular appointment. Special appointments are arranged in the clinic for patients who neglect to return for their routine examinations. In instances where the patient has returned to private care and is no longer being seen in the clinic, the necessary information is obtained from the patient's physician. All follow-up information is recorded on a follow-up card that is made out for each case (fig. 3).

Some Problems in Long-Term Follow-Up.—Certain difficulties are inherent in the long-term follow-up of patients with chronic diseases. The patient may fail to keep a clinic appointment or may move from the area. He may no longer need medical attention. The index has proved to be of considerable value in facilitating the follow-up of such patients.

Index in Relation to the Patient.—The maintenance of the normal doctor-patient relationship is particularly

important in the long-term follow-up of patients. Almost without exception, the patient is not aware that he is registered in the cardiovascular index, unless he is so informed by his physician. When direct communication with the patient is necessary (and this is done only with

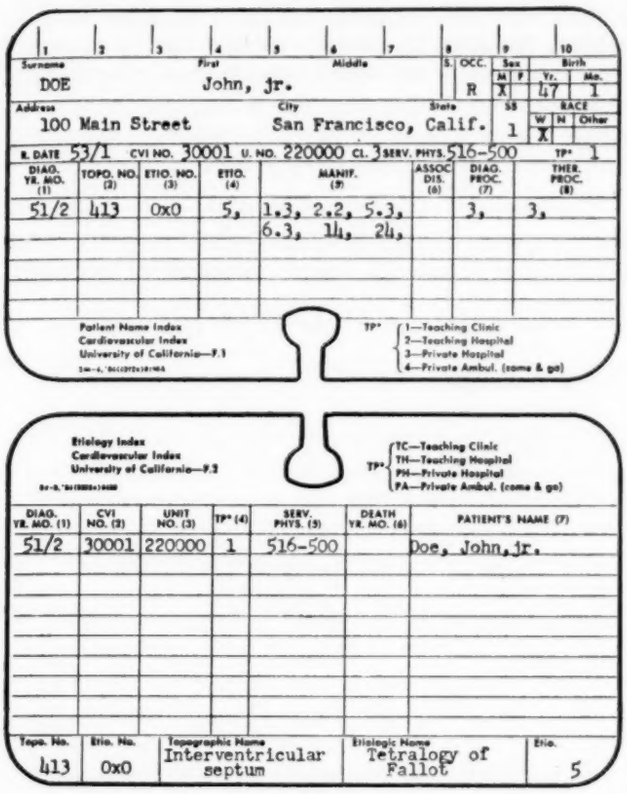

Surname DOE
First John, jr.
Address 100 Main Street
City San Francisco, Calif.
R. DATE 53/1 CVI NO. 30001 U. NO. 220000 CL. 3 SERV. PHYS. 516-500
DIAG. YR. MO. (1) 51/2
TOPO. NO. (2) 413
ETIO. NO. (3) 0x0
ETIO. (4) 5,
MANIF. (5) 1.3, 2.2, 5.3, 6.3, 14, 24,
DIAG. PROC. (7) 3,
THER. PROC. (8) 3,
Patient Name Index Cardiovascular Index University of California—9.1
TP* 1—Teaching Clinic 2—Teaching Hospital 3—Private Hospital 4—Private Ambul. (come & go)
Etiology Index Cardiovascular Index University of California—9.2
TP* TC—Teaching Clinic TH—Teaching Hospital PH—Private Hospital PA—Private Ambul. (come & go)
DIAG. YR. MO. (1) 51/2
CVI NO. (2) 30001
UNIT NO. (3) 220000
TP* (4) 1
SERV. PHYS. (5) 516-500
DEATH YR. MO. (6)
PATIENT'S NAME (7) Doe, John, jr.
Topo. No. 413
Etio. No. 0x0
Topographic Name Interventricular septum
Etiologic Name Tetralogy of Fallot
Etio. 5

Fig. 2.—Patient name index card (*top*) and etiology index card (*bottom*).

the permission of the patient's physician), the term "cardiovascular" or any other term relating to the heart is carefully omitted to avoid any possibility of producing needless anxiety on the part of the patient. Reference is made only to the interest of the physicians of the school of medicine in determining the patient's progress. To date, no complaints have been made by any registering physician or any patient regarding this aspect of the operation of the index.

Index in Relation to Patient's Physician.—The long-range follow-up of patients through the index also depends upon the cooperation of the patient's physician, whether in the teaching clinic or in private practice, since he is responsible for the actual examinations. In the teaching clinic, the index indicates when appointments are to be made, and the physician in the clinic carries out the necessary follow-up examination. If the patient reverts to private care, the physician is consulted by letter, and his cooperation is requested. In addition to explaining the structure of the index and its purpose, the letter sent to the physician asks whether his patient (1) may be contacted directly to arrange follow-up examination in the outpatient department; (2) may have a follow-up examination in the outpatient department arranged through the physician's office; (3) is not to be contacted at all, the physician agreeing to supply the follow-up information himself; (4) is permanently referred to the teaching service at the school of medicine for further supervision and treatment; or (5) is not to be included in the cardiovascular case progress index. The wishes of the patient's physician regarding further fol-

TABLE 1.—*Percentage of Response to 541 Questionnaires Sent to Referring Physicians*

Response	% of Cases
Contact patient directly	45.8
Refer patient to teaching service	33.0
Contact patient through doctor's office	6.0
Contact doctor only	1.4
Do not include patient in index	0.6
Other replies, including death of patient	3.9
Total response	90.7
No response	9.3
	100.0

low-up through the index and the procedure indicated by him are scrupulously observed. So far, the letter has been sent to 541 physicians, and responses were received from 90.7%. A tabulation of their answers is given in table 1. It is believed that this favorable response was largely dependent upon the careful explanation of the aims of the study and the purpose of the index set forth in the letter.

Follow-Up Until Death of Patient.—Patients listed in the index are followed until death. Over 1,500 patients are now registered; 10.9% of these patients have died, and 1% are "lost" in that their progress and whereabouts are unknown. Continuous attempts are made to locate these patients by contacting other hospitals, county homes for the aged, relatives, and places of business or by searching telephone books and death records. When a patient is known to have died, emphasis is placed on obtaining all available information about his death. Autopsies have been performed on approximately 60% of the patients. In such instances, a copy of the autopsy

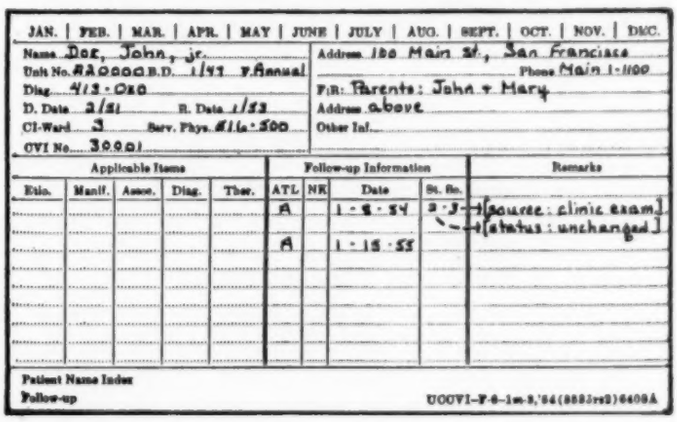

JAN. | FEB. | MAR. | APR. | MAY | JUNE | JULY | AUG. | SEPT. | OCT. | NOV. | DEC.
Name Doe, John, jr.
Unit No. 220000 B.D. 1/41 Y. Annual
Diag. 413 · 0x0
D. Date 2/51 B. Date 1/51
Cl-Ward 3 Serv. Phys. 516 · 500
CVI No. 30001
Address 100 Main St., San Francisco Phone Main 1-1100
F/R: Parents: John + Mary
Address above
Other Inf.
Applicable Items
Etio. Manif. Assoc. Diag. Ther.
Follow-up Information
ATL NR Date St. No.
A 1 · 8 · 54 3 · J · 1
A 1 · 15 · 55
Remarks
source: clinic exam
status: unchanged
Patient Name Index Follow-up
UCCVI-F-6-1m-8,'54(8883rs2)6408A

Fig. 3.—Follow-up card. These are arranged in file boxes according to the place of registration.

report is secured to complete the patient's hospital record; if the entire report is not available, the autopsy diagnosis is requested. When no autopsy has been performed, information is obtained from the death certificate. If this final information indicates that the diagnosis registered in the index is inaccurate, the diagnosis is corrected.

Evaluation of First Fifteen Hundred Registered Cases

The information listed for the first 1,500 registered cases was reviewed. Of the 1,500 patients, 46.6% are men and 53.4% are women. The distribution according to age is as follows: under 10 years, 16.9%; from 10 through 19 years, 6.5%; 20 through 34 years, 14.5%; 35 through 44 years, 12.5%; 45 through 64 years, 31.5%; and over 65 years, 18.1%. The majority of patients live in San Francisco County (40.5%); 30.5% live in Bay Area counties other than San Francisco and 29.0% in other counties of the state of California. In analyzing the etiology of diagnosis, table 2 reveals that over 50% of the cases have either congenital or arteriosclerotic etiology. The data were also summarized according to place of registration (table 3), type of patient (table 4), and occupation (table 5).

Uses of Index

The cardiovascular case progress index is useful for teaching and research. A primary function is to identify suitable patients for whatever purposes may be under consideration. Cases may be identified by the diagnosis and according to etiology, manifestations, associated disorders, and diagnostic and therapeutic procedures. The index readily provides information on the duration of the patient's disease and the presence of any complications. Further, because the whereabouts of each patient is known, the availability of a patient for presentation at teaching seminars or for further research study is easily determined.

TABLE 2.—*Etiology in 1,500 Cases*

Etiology of Cardiovascular Disease *	% of Cases
Congenital	27.3
Arteriosclerotic	25.5
Hypertensive	18.7
Rheumatic	13.4
Other	8.6
Unknown	6.5
	100.0

* Multiple diagnoses were made in 21.1% of these cases and supplementary diagnoses in 15.7% of the cases.

Use for Teaching.—Individual patients or groups of patients can be made available for presentation at lectures, teaching rounds, or seminars. Patients in various stages of any cardiovascular disease may be easily found. Examples of complications and associated disorders can be demonstrated, and the value of different diagnostic and therapeutic procedures can be shown.

Uses for Research.—The index provides a mechanism for the easy identification of patients suitable for research projects in cardiovascular disease. These research studies may be carried out in three ways: 1. Investigations involving only information included on the registration sheet and the index cards may be carried out by simple statistical review of the coded information. A punch-card analysis has been used for projects of this type. 2. If more detailed information is required than that which is included on the registration sheet and coded in the index, recourse may be made to the patient's hospital or clinic record. In this way, all available information regarding the patient may be utilized. Once again, it has been found helpful to use punch-card methods specially designed for each research project. 3. For specialized studies involving more information than is coded in the index or recorded in the patient's chart, the index makes it possible to select suitable patients, to locate them, and to arrange for their return to the school of medicine for whatever special evaluation may be needed. All research projects carried out by means of the mechanism of the index remain identifiable as such, and follow-up studies may be carried out many years later.

Illustrative Study

The following simple research study project will illustrate a use of the cardiovascular case progress index. All patients registered with a diagnosis of peripheral vascular disease were studied to determine the incidence of symptoms of coronary artery disease. A punch card was made for each of these patients. The name-index card of each patient was then examined to determine whether (1) a diagnosis of coronary artery disease had been made; (2) any such diagnosis had been made under associated disorders; and (3) "angina on effort," "prolonged pain of coronary insufficiency," or "myocardial infarction" was listed among the manifestations. The results were easily determined from an analysis of the punch cards. These indicated that 6.4% of the group of patients with peripheral vascular disease had symptoms of coronary artery disease.

TABLE 3.—*Data According to Place of Registration*

Place of Registration	% of Cases
Adult cardiac clinic	45.5
Peripheral vascular clinic	16.9
Pediatric cardiac clinic	11.1
Other clinics	7.1
Teaching and private wards	18.9
Private come-and-go patients	0.5
	100.0

TABLE 4.—*Data According to Type of Patient*

Type of Patient	% of Cases
Teaching clinic	80.6
Teaching hospital	13.3
Private hospital	5.6
Private come-and-go	0.5
	100.0

TABLE 5.—*Data According to Occupation*

Occupation		% of Cases
Unemployed		
	Children (under 16)	21.6
	Housewives	21.1
	Retired and others	31.6
		74.3
Employed		
	Professional and semiprofessional	2.1
	Craftsmen	5.1
	Clerical workers	6.0
	Operative workers	3.1
	Service workers	4.6
	Others	4.8
		25.7
		100.0

Comment

There is a need for mechanisms similar to the cardiovascular case progress index in the field of the chronic diseases, and it is hoped that the index we have set up

will serve as a stimulus to the establishment of such projects. The thorough study of any clinical problem, especially those related to chronic diseases, requires a continuity of aim and objective over many years that will be independent of the special interest of any single individual. The true value of this project in the study of cardiovascular disease will not be known for a long time. If it is possible to continue to collect such detailed information and have it available for study, it seems likely that many fruitful investigations will be carried out in the future and that much knowledge will be gained in the field of chronic disease to fill the voids that exist at the present time.

Summary

A cardiovascular case progress index was established in 1953 at the University of California School of Medicine as an aid to the long-range study of these chronic diseases. The index registers all cases of cardiovascular disease and classifies them according to diagnosis, etiology, manifestations, associated disorders, and diagnostic and therapeutic procedures. The index facilitates the selection of patients for teaching seminars and for research purposes. It provides for the long-term follow-up of patients. It is hoped that it will serve to stimulate the development of similar projects for the study of chronic diseases.

LABORATORY PROCEDURES AS AN EMOTIONAL STRESS

Stanley M. Kaplan, M.D., Cincinnati

• The emotional reactions aroused by diagnostic laboratory tests were studied in 30 patients, who were interviewed by a psychiatrist within 24 hours after such procedures. Instances of extreme reaction occurred in uninformed or misinformed patients, who not only feared the apparatus but also drew unwarranted inferences as to the nature and gravity of their illness. A second visit to the same laboratory was less disturbing than the first.

The physician's awareness that his patients are frequently uninformed and frightened is a first step toward reducing their discomfort and recognizing their defensive maneuvers. A knowledge of the patient's personality structure and past experiences helps to secure the necessary cooperation and to establish good physician-patient relationships.

All physicians know that patients vary tremendously in their reactions to diagnostic and therapeutic procedures. Some are casual, some stoic, and some frightened. A study of such responses may lead to a better understanding of individual patients and so to a more effective therapy. Case history excerpts of 30 patients mainly from the psychosomatic service of the Cincinnati General Hospital are included in this report. The patients admitted to this service were studied comprehensively. Along with a complete medical examination, personal histories were obtained, relatives were interviewed, and psychological tests were given to certain patients. Many of these patients received some form of psychotherapy, and their ward behavior was carefully observed. These data provide an opportunity to study patients' reactions to laboratory tests in terms of their individual personalities, their current environments, and their interpersonal relationships.

Each of the 30 patients used in this study was interviewed by a psychiatrist within 24 hours after a laboratory procedure. Essentially, then, each patient had an opportunity to talk about his ideas and feelings associated with the laboratory tests. Each patient had an average of three diagnostic procedures, in addition to routine urinalysis and blood cell counts. In some instances the laboratory procedure was discussed in detail with the patient. In others, only casual comments or no comments were made. In addition to the findings from these 30 patients, I have also drawn examples from observing other patients in this and other hospitals.

Findings of Study

Reactions to Misinformation.—Even though patients are poorly informed or completely unfamiliar with laboratory procedures, they may hesitate for a number of reasons to question their doctors about them. For example, they may feel that they are taking up the doctor's valuable time, or they may feel ashamed to reveal that they are frightened by the tests. They frequently seek information from friends, relatives, or roommates, despite the fact that these people are often poorly informed. They may recall discussions they have had with friends in the past about certain procedures, or they may have no available source of information. Thus, with little or no knowledge of the forthcoming event, their speculations about the test are often distorted, far removed from the reality of the testing situation, and consequently emotionally charged for them.[1]

A 40-year-old man was obviously anxious during and after a spinal tap. Several hours after the procedure he complained of back pain. He said he was worried that he might develop a paralysis of his lower extremities. He had understood from a previous conversation with a friend that this could occur if the patient moved when the needle was inserted. He was certain that he had jumped while the needle was in. Actually no difficulties were experienced by the physician who did the procedure. The patient had jumped when the local anesthetic was introduced into the skin.

A most serious reaction to a diagnostic procedure occurred in a 56-year-old woman following the administration of a test dose of radioactive iodine. This patient's principal personality problem involved the restraint of her unconscious destructive impulses. She expressed concern the night before she was to have a radioactive tracer study. She had heard from another patient that she would explode if she did not urinate immediately after taking this substance, which she apparently had linked with the atom

From the Department of Psychiatry, University of Cincinnati College of Medicine, and the Psychosomatic Service, Cincinnati General Hospital. Special Research Fellow, Public Health Service, National Institute of Mental Health.

bomb. The patient was told by her physician that this was not true, and he suggested that since she was upset the test be delayed. She wished to proceed with it. The following day, after returning from the radioactive iodine laboratory, she developed a psychotic depression and had to be transferred to a closed psychiatric ward. The predominant theme of her verbalization concerned feelings of omnipotent destructive powers.

Patients are seldom anxious about tests they have had before. They are often frightened the first time a roentgenogram or cardiogram is taken but have little or no apprehension on subsequent occasions. This can be attributed to the fact that the previous experience familiarized them with the procedure.

When a 40-year-old woman, who had a cardiogram, was questioned about the test, she said, "I wasn't bothered by it. I had one once before on the ward. I was really scared then. I was afraid they would shock me with all those wires. There wasn't anything to it. It was the same way with the breathing test [basal metabolism], there wasn't anything to that either."

Reactions to the Testing Environment and Apparatus.—Patients are often tested in unfamiliar surroundings. They see strange gadgets and awesome apparatus, some of which are applied to their bodies. The tests frequently are conducted by persons with whom they are unacquainted rather than by their own physician. These factors add to their fears.[1]

A 38-year-old man was brought to the receiving ward because of an acute myocardial infarction. He was apprehensive about leaving his wife and entering the hospital, since he was quite dependent upon her. His most anxious moment occurred, however, during an electrocardiogram. He became frightened when the electrodes were applied, since he expected an electrical shock. This apprehension was particularly undesirable inasmuch as the patient had so recently experienced a coronary occlusion.

A 14-year-old boy with gastric disturbances was sent to the x-ray department for a gastrointestinal series. It was apparent that a struggle for control of hostile, destructive impulses was important in his personality organization. When he returned to the ward he said, "The big machine bothered me. It was spooky. It made me think of movies like Frankenstein. Frankenstein was on a table that stood him up like that. He broke the straps and stomped off and killed people." The darkness was "frightening" and "the red light that went off and on was spooky." He said he was ordinarily afraid of the dark and always had left the light on when he went to sleep.

Influence of Procedures on Patients' Understanding of Their Illness.—Patients often have mixed feelings about learning the nature of their ailments. Even though they are interested, they may be afraid to know the extent of their disease, since it can imply such consequences as a threat to their life, the suffering of pain, and prolonged hospitalization. Consequently, they may not seek information from their doctors and instead adopt an attitude of "what you don't know won't hurt you." The doctor may not recognize the patient's concern and, therefore, provide little opportunity for a discussion of the illness. Although the patient may hesitate to question the doctor about the illness, he may attempt to discern the severity of his disease from maneuvers such as laboratory procedures. This, however, usually supplies incomplete knowledge and provides the patient with distorted impressions of his illness. Diagnostic procedures are often focused upon some area of the patient's body apparently unrelated to the organ being tested. For example, a basal metabolism test may seem to the patient to be a study of respiratory function rather than thyroid activity. As a result, the patient may think that the doctor has located an additional area of disease.

A 40-year-old hypertensive patient, who had experienced a cerebral hemorrhage, was quite anxious and angry about a spinal puncture. Following the tap he complained of feeling "dazed." "I don't like anyone messing with my back." He wondered why the test was done and believed it was to determine whether there were "germs" in his spine. He thought the doctors were looking for "spinal meningitis." He believed that meningitis "twists a person up until it breaks their neck."

A 32-year-old man with a healing peptic ulcer was sent to the x-ray department for an upper gastrointestinal series. He was quite concerned, since "the doctor would say 'there it is, take an x-ray.'" This happened several times, and the patient construed from this that he had developed a number of ulcers. "They even took pictures from my back." He recalled that he had had a tapeworm in the past and also an "injured kidney." He wondered whether evidence of these conditions was found from the posterior view.

Though it is usually desirable for the physician to be completely truthful with his patient and to keep him informed about his illness, there are times when the doctor may choose to withhold information. For example, he may wish to delay discussing a serious illness with a patient until he feels there is more than a suggestion of its presence. Instead, he may wish to await the results of further studies. For instance, the doctor may feel that the disclosure of a diagnosis of cancer could not be tolerated by the patient. As most physicians have learned, it is difficult to conceal such information. The patient may sense the doctor's anxiety and concern or he may learn indirectly about the withheld material. The patient may overhear comments that are made by the physicians or technicians doing a test, or, he may glance at the chart while on the way to the laboratory or x-ray department. Information derived in this manner is usually disturbing, particularly since the patient may misinterpret what he sees or hears.

A 39-year-old woman with scleroderma and hypertension was readmitted to the hospital. She experienced severe headaches that lasted for days, anorexia, nausea, vomiting, and chest pain. An x-ray of the chest at the time of admission revealed an aneurysm of the aorta. A repeat film was requested. After the x-ray the patient commented that the doctor who took the x-ray said to another in the room that there was a "mass" present. She wondered what this meant—whether there was anything "growing." She would not elaborate further, but thought it might be related to her heart, as the pain she experienced was in that area.

Influence of Patient's Personality on Response to Procedures.—The patient's personality structure and his past experiences with doctors and illness may determine the manner in which he reacts to testing procedures. It is well known that the strongest of men can become tremulous and faint when confronted by a needle and syringe—not so much because of the pain but because of the psychological meaning of the total experience. The person who fears being hurt by authoritative figures may feel quite vulnerable when the doctor conducts tests, a person suffering with feelings of guilt may conceive of the situation as a form of punishment, and a person with sexual anxieties may unconsciously equate the experience with a sexual attack.

A 38-year-old man with a peptic ulcer had considerable anxiety about his unconscious homosexual wishes. He reported the following thoughts after an upper gastrointestinal series. "They

pushed that long thing on the x-ray way in my stomach." He became nauseated because of the "thick white stuff on a stick I had to swallow." On further questioning he said it reminded him "well, not of milk. Well, sort of like the stuff that comes out of a man." He was referring to semen.

An adolescent girl with diabetes was sent to the x-ray department for a recheck of a chest film. The initial film suggested the presence of an active tuberculous lesion. On questioning she said she "wondered why they took a second one. I don't know what's in there." She also had thought about an intravenous pyelogram she had had. "I wondered why they put dye in my veins. I asked the technician, and he said to see how much I absorb. Absorb—so what. So what does that mean? Nothing to me. The doctors know what they are doing—so to heck with it. I can understand if they do a blood test for sugar but why all the others? What are they looking for? What connection does this have with my diabetes? Like my mother. First she had diabetes, then tuberculosis, and died of kidney disease. I'm too young to die. She was 40 when she died. I do take after her. Seems my diabetes began at the same time as hers." In her identification with her dead mother she wondered whether she was progressing through the same sequence of diseases.

Procedures often interrupt the patient's daily routine. For example, they may cause omission or delay of a meal for many hours. Though this can be tolerated by most people, those who are particularly sensitive psychologically to deprivation of food may react with anger.

A concentration-dilution test was performed on a 48-year-old woman. She was asked how she felt the morning it was done. After stating that her headaches were much worse, she began to discuss the test. "They got started two hours later, so I didn't get any breakfast and it threw my lunch back two hours. I wasn't allowed any water last night." She asked angrily when she would be leaving the hospital, since she really did not think she was feeling any better.

If a patient utilizes illness neurotically, or if the physical complaint is entirely on a neurotic basis, a test may represent a challenge to the useful symptoms. Consequently, the patient may react with anger, anxiety, and poor cooperation.

A 46-year-old man, with a history of many years of angina-like pains, complied with the Master two-step test but in a passive, hostile way. He failed to follow directions and had to be urged to move faster. After completing the exercise, he collapsed in bed, moaning and complaining of the intrascapular pain. He was saying in his behavior, "Look what you've done to me." An attempt to get him to discuss his feelings about the test only elicited denial of feelings. When he returned to the ward he had an outburst of anger about the food. "I can't eat that slop." He walked off the ward. He returned, but remained angry the remainder of the day. His gastric symptoms, headaches, and angina-like pains became worse.

A patient may react to the same test in a different way at different times. This will depend upon his current wishes and frustrations and his relationship with the doctor, nurses, and other patients. An opportunity to observe such changes occurred in a patient who received psychotherapy over an extended period of time.

A 29-year-old woman experienced daily throat swabbings as part of a research study on variations in the bacterial flora of the pharynx. She was admitted to the service because of her problems of rehabilitation following a commissurotomy for mitral stenosis. Early during hospitalization, her attitude about the throat swabs was, "I'm sort of beginning to wonder what they are checking up on in my throat and in my mouth." This reference, though on the surface it seemed mainly concerned with "checking up on" the bacteria of the throat, unconsciously expressed the patient's uneasiness about the therapist's probing for personal life history. Later during the course of therapy the patient was strongly reassured that she was not a cardiac invalid. This meant to her that she would have to give up the sick status that had afforded her the solicitous care and attention of her mother. Her comments of "I asked Dr. F. when she took the culture the other day if I had ever had tuberculosis" and "I was in one of those moods feeling very sorry for myself" reflected her unconscious wish for another disease to substitute for the cardiac disability she was relinquishing. On another occasion, when she was angry at her doctor, she utilized the test situation as a means of retaliation. She had been asked to refrain from smoking prior to throat swabbing. When the swab was to be taken she innocently said, "Well, look here, I'm smoking a cigarette." She was concerned on another occasion when an extra swab was taken of her throat. At the same time a swab was taken of another patient, who was her rival. "When you came in and took an extra swab I thought, now they've found something. When I found out you had gotten one on L. [the rival], too, I thought maybe you were checking to see if I have given her some kind of germ." In this instance, the swabbing represented to the patient a test of the dangers of the hostile, destructive feelings she had toward her rival. Finally, at a time when the patient's husband threatened to divorce her, she had particularly intense needs to maintain a secure, dependent relationship with her doctor. She commented about the procedure, "You aren't just taking these cultures to keep me pacified, to stay here—well, I would be willing to stay here. I want you to take them if you want to, but if you're taking them for the reason I mentioned you don't need to because I would stay anyway." On this occasion, the swab was identified with a pacifier, that is, a gift from the doctor, and the situation was utilized to gain the good graces of the doctor.

Influence on Physician-Patient Relationship.—Doctors' personalities vary, and the individual doctor's mood changes. He may be so sensitive to his patients' fears and anxieties that he will fail to carry a necessary test to completion or fail to order a possibly important test to avoid causing the patient discomfort. At the opposite extreme, the doctor may happen to have a particularly annoying or irritating day in the office, or perhaps be angry with his garage for fixing his car badly, and therefore discharge some of his anger through rough and unsympathetic handling of a patient during a procedure. The doctor-patient relationship can be markedly affected by these procedures. For instance, interns and residents are at times almost completely evaluated by patients in terms of their ability to do a venipuncture with a minimum of pain. The relief of the patient's anxiety about the test through adequate discussion provides a feeling of closeness to the physician.

A quite dependent 45-year-old man with a peptic ulcer discussed his relation with his doctor, who was transferred to another service. "I was pretty much attached to Dr. B.—I miss him a great deal." When he was asked to describe this relationship he said, "Well, every morning he'd be up and cheerful—for my money he was a good doctor—explained what he done and what tests I got and what was going to happen—like when I went to be gastroscoped I was upset—he talked to me about it and he was right, it wasn't as bad as I thought it would be—I pictured it to be quite a job."

Patients can become quite depressed after the diagnostic testing period of their hospitalization is completed, since the solicitous doctors may abruptly withdraw their interest in the patient after the diagnosis is made. The patient is frequently given less attention during the treatment phase.[2]

A 62-year-old man with dermatomyositis was the object of a great deal of the doctors' interest because of the comparative rarity of this disease. He was given many tests and much attention. The interest of the personnel sharply decreased, however,

after the diagnostic period, and his case was then considered a routine problem in management. He became progressively weaker and a helpless invalid. It became apparent that he had had excessive needs for care and attention all his life. With the sudden loss of interest on the part of the doctors, he became seriously depressed. Generous, enthusiastic attentiveness of the staff brought a prompt reversal of his downhill course.

Not infrequently patients consider tests a part of the treatment regimen, even though there is no intended therapeutic purpose. The attention and interest displayed by the doctor during the procedure may have therapeutic value. Highly suggestible patients may be particularly prone to see therapeutic significance in the test. Coincidental relief of symptoms following the procedure may be seen as cause and effect by the patient or his family.

A comatose 55-year-old man was admitted to the hospital with hemiparesis on the right side. A routine spinal tap revealed a normal pressure, some red blood cells, and an elevated protein level. Shortly after the tap, the patient awakened and the signs of hemiparesis disappeared. The patient's family was quite convinced, despite the physician's modest and honest comments to the contrary, that the spinal tap was responsible for the more favorable turn of events.

Problems of Patient Cooperation.—Some patients, when confronted with procedures, become uncooperative, while others accept them without complaint. The doctor is usually inclined favorably toward passive, compliant persons who suffer in silence. These people take up less of his time and patience.

A 40-year-old man was admitted to the hospital because of joint swelling. When questioned about the knee aspiration, gastric analyses, prostatic massage, and other procedures, his comments included: "they froze the knee, I felt very little—I did wonder whether the needle could break off"; "if the entire world advanced as rapidly as the medical profession there wouldn't be any wars"; "I can see that these tests are necessary"; "the doctor doesn't leave a stone unturned"; and "I hope these studies advance medical science in some little way." The doctors were quite pleased with him.

The patient may fail to appear for a test at the appointed time. If he appears, he may complain bitterly about the pain. He may squirm when the doctor wants him to remain still. He may withdraw a part of his body when approached with an instrument. It is important to realize that there are reasons for this lack of cooperation. These reasons can best be understood in terms of the patient's total personality. The patient may fear he will be hurt but not verbalize the fear, he may be afraid of the results of the test, or he may ordinarily rebel in the face of authority. Uncooperativeness may be utilized by the patient to deemphasize an unconscious wish to prevent optimal care because of self-destructive impulses.

An adolescent girl with diabetes was considered uncooperative, since she presented only two samples of her urine for sugar and acetone daily instead of four, as she was instructed to do. When questioned about this, she indicated that she was ashamed to carry the urine specimen to the laboratory on the floor. "Everyone knows what you have been doing. The laboratory boy (to whom she was sexually attracted) is in there so often, and I refuse to walk in there with a bedpan while he's in there, so I usually sneak in early in the morning and late at night."

Comment

Reactions such as those I have cited do not always occur when a diagnostic procedure is performed. Many of the examples were chosen specifically to illustrate the point to be made. The psychological impact is so frequently significant, however, that it warrants the physician's attention. The manner in which the physician relates to his patients at these times can make the difference between a good and poor physician-patient relationship.

There is a growing awareness of the importance of the physician-patient relationship. In an atmosphere of mutual trust and good will, the patient's apprehensions about his illness are reduced and there is an increased feeling of security in the care of the friendly and skilled person, the doctor. Much of the success of treatment depends upon this relationship. This influence, in fact, is significant even before the person presents himself at the doctor's office or at the hospital for medical attention. Among the many reasons that people delay seeking medical care is a fear of being physically hurt by diagnostic and therapeutic procedures. Delays are potentially dangerous, since a failure to visit the physician during the initial stages of illness can result in needless suffering, the loss of valuable treatment time, or the progression of the disease to a therapeutically irreversible stage. It is the doctor's job to provide his patients with conditions in which these fears are minimized.[3]

It is important, and not surprising to find, that patients generally are less apprehensive about procedures they have experienced previously. People ordinarily are less frightened by the familiar, than by the unfamiliar, situation. Their previous experiences often teach them that there is no reason to be afraid or enable them to devise psychological means of coping with the situation. It would follow, therefore, that the better the physician is able to acquaint the patient beforehand with the procedure the less likely the patient will be disturbed by it.

A discussion with the patient of the diagnostic procedure will reduce, but certainly not eliminate, the chances of untoward reactions. It is impossible for the physician to predict all the possible adverse circumstances that may arise during a procedure, particularly if it is being done by someone other than himself. In addition, the patients' neurotic needs may be of sufficient intensity that he will distort much of what the physician has explained to him.[4] In any event, careful observation and investigation of the patient's response to such stress can provide additional valuable information concerning the person's personality structure and patterns of behavior.[2]

It would be difficult to describe a specific way for doctors to discuss these diagnostic procedures with their patients. There is probably no one best way. The personalities of doctors differ, and each doctor approaches his patients in a slightly different manner to achieve an optimal relationship. This variation should fall within certain limits of respect for and understanding of the psychological needs of the people who come for medical care. Perhaps the essential point is an awareness on the part of the doctor that his patients are frequently uninformed and frightened. Appreciating this, he will more likely observe his patients' discomforts and provide an opportunity for reducing them through explanation and reassurance. If the doctor lacks this awareness, he may become impatient and intolerant of the patient's defensive maneuvers. If the physician fails to recognize the under-

lying fears and anxieties, he may angrily respond to his patients' surface behavior by branding them "uncooperative," "neurotic," "immature," or "unreliable." These rebuffs usually increase patients' fears and cause a breach in the professional relationship.

Finally, patients often complain about the expense of medical care. Not infrequently the physician's or hospital's fees are considerably increased by the expenses of diagnostic tests for which the patient may have had little opportunity to understand the value and importance. An explanation of the test may provide the patient with the feeling that the expense was for good reason, rather than feeling that some unfair advantage was taken of him.

Summary

It is commonly recognized that some patients become apprehensive when they are subjected to laboratory procedures. Some of the common meanings these experiences may have for patients were ascertained by interview and observation subsequent to testing procedures. Thirty patients, each experiencing an average of three procedures, were interviewed by a psychiatrist within 24 hours after medical diagnostic testing. Patients, at times, react unfavorably to tests because they are unfamiliar with the procedure, the apparatus used, and the environment in which the tests are done. Patients may attempt to determine the nature and severity of their illness by the tests they are given, rather than by discussing their ailment with their physician. The personality structure of the patient and his past experiences with illness influence his reactions to tests. The personality of the doctor and the manner in which he relates to his patients will influence the patients' response to these procedures. The manner in which the physician supports his patients through this aspect of their illness will affect their relationship.

1. Barker, R. G.; Wright, B. A.; Myerson, L., and Gonick, M. R.: Adjustment to Physical Handicap and Illness: A Survey of the Social Psychology of Physique and Disability, bulletin 55, New York, Social Science Research Council, 1953.

2. Higgins, J. W., and Kaplan, S. M.: Some Effects of Hospitalization on Clinical Status of Patients, J. A. M. A. **152**: 109-114 (May 9) 1953.

3. (*a*) Footnote 1, (*b*) Titchener, J. L., and others: The Problem of Delay in Seeking Surgical Care, J. A. M. A. **160**: 1187-1193 (April 7) 1956.

4. Hart, A. D.: Iatrogenics and Cardiac Neurosis—a Critique, J. A. M. A. **156**: 1133-1138 (Nov. 20) 1954.

TREATMENT OF ENTEROBIASIS WITH ONE ORAL DOSE OF PROMETHAZINE HYDROCHLORIDE

John L. Avery, M.D., Silver Spring, Md.

• Pinworm infestation was treated in 100 patients by oral administration of promethazine. In each case the diagnosis was made by finding either the ova or the adult forms of Enterobius vermicularis. The patient was not required to fast before treatment but took a single bedtime dose of 125 mg. of promethazine hydrochloride.

Sleep was disturbed in only five instances. There was no drowsiness the following morning. Worms were detectable in the feces, but thereafter anal swabs showed absence of the parasites in all but three patients.

Patients in whom reinfection occurred 53 or more days after the first treatment were effectively treated a second time without difficulty. No indications of toxicity were found, and the advantages of an inexpensive, oral, one-dose treatment for pinworm infestation were evident.

Enterobiasis (infection by the pinworm Enterobius vermicularis) is the most widely distributed of human helminthic diseases. It is estimated that there are at least 18 million cases in the United States and Canada.[1] Warm regions or cool moist ones are most favorable for the development of the ova (sunlight and dryness destroy them); infestation, however, occurs in cold climates as well. Although most prevalent in population groups of low economic status who live under crowded and unsanitary conditions, the disease is found at all economic levels and is important even in the higher income brackets. Usually familial and especially widespread among children, enterobiasis is also a particularly troublesome problem in institutions.[1A] In the United States it has been estimated that 40% of the white population less than 20 years old is infested but only 10% of the Negroes.[1] In one study,[1] conducted in the Washington, D. C., area, 35% of the preschool children, 51% of those in school, and 22% of the adults studied harbored the worms. Wright, Cram, and others [2] have extensively studied the etiology and epidemiology of enterobiasis. Their publications describe in detail the complications involved in extermination of the parasites in man and explain the impossibility of efficient hygienic control.

The pathology and symptoms of enterobiasis are well known. Heavily infected patients usually complain of an intense perianal pruritus or occasionally vaginitis. Sisk [3] mentions nightmares as the third most frequent symptom of pinworm infection per se. The average patient is generally anemic and debilitated and may report gastrointestinal disturbances, anorexia, loss of weight, excessive nervousness, restlessness, or insomnia. Infestations in some patients, however, are practically symptomless and may be discovered by accident, as by the finding, at operation, of an appendix filled with worms. Vague abdominal complaints and behavior symptoms in children, such as nail biting, thumb sucking, nose picking, grinding of teeth at night, irritability, frequent scratching, inattention, and poor performance at school, often ascribed to other causes, many indicate the presence of E. vermicularis.[4]

Some Methods of Treatment

As pointed out by Wright and Cram,[2a] a vermifuge, to be entirely satisfactory, must completely eradicate the

The promethazine hydrochloride used in this study was supplied as Phenergan hydrochloride by Wyeth Laboratories, Philadelphia.

parasite from the intestine. The ideal agent should be safe for all age groups and should be so potent that a single dose (which must be administered simultaneously to the patient and each of his group contacts) will be active against all larvae in the small intestine and will permeate all parts of the large intestine, eliminating the preadult and adult worms harbored there. Supplementary use of burdensome or unpleasant local or other measures, such as enemas, suppositories, ointments, starvation, or purgation, should be unnecessary. The treatment should also be inexpensive, for reinfections are usually unavoidable, necessitating repetition of the medication at intervals in all members of the household or inmates of the institution. No anthelmintic has heretofore met these requirements.

Many agents have been tried, including methylrosanaline chloride (gentian violet), *p*-benzylphenyl carbamate, hexylresorcinol, tetrachloroethylene, bismuth subnitrate, garlic in various forms, bilberries, papain, triphenylmethane, santonin, carbon tetrachloride, thymol N-isoamylcarbamate, aluminum acetate (subacetate), the veterinary anthelmintic phenothiazine (thiodiphenylamine), tripelennamine hydrochloride, diphenhydramine hydrochloride, and preparations of piperazine and tetracycline. Phenothiazine is believed to reduce ovulation and ultimately destroy the worms; the usual antihistamines, it is suggested, may anesthetize the parasites, thus facilitating expulsion.

The agents tried so far, however, have been unsatisfactory for one or more reasons, mainly insufficiency of action, toxicity, inconvenience, and expense. Phenothiazine, which has been used intermittently for treatment of infestation in the human since 1940,[5] eliminates the worms but is apparently too toxic for general use. El-Din [6] tested the enterobicidal properties of phenothiazine and certain other preparations, including several antihistamine compounds, in a series of Egyptian patients. Promethazine hydrochloride (a powerful antihistamine derived from phenothiazine), which has been used widely in human medicine for some six years abroad and approximately four years in the United States, yielded the most encouraging results. El-Din believes that the resemblance in molecular structure of this drug to that of the parent compound may account for the greater efficacy of promethazine against enterobiasis.

There are, however, certain chemical and clinical differences between phenothiazine ($C_{12}H_9NS$) and promethazine [N-(2′-dimethylamino-2′-methyl)ethyl-phenothiazine hydrochloride] that may explain the lack of toxicity of the derivative substance. Up to the present time, there has been no report in the world literature of toxic effects clearly attributable to promethazine. No side-actions more serious than drowsiness have been observed.[7] A clinical trial was therefore initiated, in private practice, to determine whether a one-dose oral treatment with promethazine alone would eliminate pinworm infestation.

The Present Study

This study of 100 white patients (mainly children 3 to 12 years old) was begun in the spring of 1952 and conducted over a two-year period. Infestation by E. vermicularis had been proved in all, either by demonstration of the ova on cellophane tape swabs or by discovery of adult worms. The dosage of phenothiazine used by earlier investigators seemed large (El-Din [6] administered a total of 28 gm. for adults and 14 gm. for children in seven-day courses, repeat courses being required in some cases). Promethazine, when used for an antihistaminic effect, is generally administered in total daily doses of 25 mg. (two tablets of 12.5 mg.); however, as much as 1,400 mg. has been given every day for an extended period in certain mental disorders, with no evidence of toxicity.[7A]

The dosage of promethazine employed in this series, therefore, was arbitrarily set at 10 tablets of 12.5 mg. (total 125 mg.), to be administered in a single dose at bedtime, with no preliminary fasting of the patient. For small children, the tablets were crushed in jelly or syrup. Although promethazine is commercially available in syrup form, especially for medication of children, the fluid preparation was not used for the younger patients in this series because too great a dose volume (100 cc.) would have been necessary.

One or more anal swabs were then taken by a relative of the patient, using a 2 in. length of cellophane tape, 10 days or more after medication. The initial post-treatment swab should not be taken for at least 10 days because ovulation and migration of the worm may temporarily cease on ingestion of a noxious material by the host. Wright [7B] feels that swabs should be repeated thereafter every second or third day for a total of at least 7 or, better, 10 times. The simplest technique [8] is to press the adhesive surface of the tape to the skin at the anal orifice as soon as the patient awakens in the morning. The tape (to which any eggs present on the skin will have become attached) is then transferred to a glass slide, which is returned for laboratory examination.

Results

Of the 100 patients treated orally with a single bedtime dose of promethazine, 97% were rendered free of E. vermicularis according to the standard criterion—continuous negative post-treatment anal swabs. The patients reported excessive hunger on the morning after medication; worms were detectable in the stools. There were three failures, two in children and one in an adult. In one case, at least, the child may not have received the full dose, since the mother objected to administering all 10 tablets because of the child's resistance. One patient was later treated unsuccessfully with two other enterobicides (one containing piperazine and the other *p*-benzylphenyl carbamate). Fifty-three days to several months after treatment, the anal swabs from a number of the patients again became positive. These were considered reinfections.

Because it is so difficult, if not impossible, to rid living quarters of viable eggs, reinfections have always been a serious problem in pinworm control. Autoinfection (retroinfection) further complicates the situation.[9] It is believed that infective larvae may emerge from ova harbored in the perianal region and migrate into the anal canal. Thus, regardless of the hygienic measures practiced by the host, an acute infection may be perpetuated.

Therefore, in some families and in institutions it may be advisable to treat all members of the group routinely every four months.

None of the patients in this series reported drowsiness on the morning after medication. One adult man who inadvertently took double the quantity of tablets prescribed (a total of 20 tablets, or 250 mg.) had a normal night's sleep with no morning lethargy. Nightmares occurred in 5% (children 4 to 8 years old). None were severe. These episodes were unusual in that the patients became belligerent rather than frightened. None had exhibited this type of behavior previously. One of the children, treated for reinfection several months later, again had the same reaction; another, when retreated after a considerable interval, did not. Before prescribing treatment, I now warn the patient or his parents of the possibility of sleep disturbances on the night of medication and suggest the use of a hypnotic. Such episodes may be the expression of a reaction to large amounts of the toxic by-products of heavy infestation, abruptly released by the activity of the drug upon the worms, or they may be pure coincidence. No proof is available at present. Further studies are in progress to determine the optimum dosage with promethazine.

Summary

Promethazine was administered at bedtime, in a single oral dose totaling 125 mg., to 100 children and adults infested with Enterobius vermicularis. As demonstrated by negative post-treatment cellophane tape swabs, 97% were freed of infection. No evidence of true toxicity was encountered. No patient reported drowsiness the following morning. Five per cent of the patients (children 4 to 8 years old) experienced nightmares on the night of medication, which, it is suggested, may represent a reaction to the toxic by-products of heavy infestation, abruptly released by the activity of the drug upon the worms. (Nightmares are the third most frequent symptom of E. vermicularis infestation.) Promethazine affords an inexpensive, nontoxic, one-dose oral treatment for the eradication of pinworms.

10110 Georgia Ave.

1. Bumbalo, T. S., and Gustina, F. J.: Treatment of Pinworm Infection in Children, Scientific Exhibit, Postgrad. Med. **14**: 83-86, 1953.

1A. Cram, E. B.: Studies on Oxyuriasis: Familial Nature of Pinworm Infestation, M. Ann. District of Columbia **10**: 39-48, 1941.

2. (*a*) Wright, W. H., and Cram, E. B.: Studies on Oxyuriasis: IV. Some Aspects of the Problem of Therapy, Am. J. Dis. Child. **54**: 1276-1284 (Dec.) 1937. (*b*) Wright, W. H.; Brady, F. J., and Bozicevich, J.: Studies on Oxyuriasis: VIII. A Preliminary Note on Therapy with Gentian Violet, Proc. Helmintholog. Soc. Washington **5**: 5-7, 1938. (*c*) Bozicevich, J., and Brady, F. J.: Studies on Oxyuriasis: XV. A Study of 504 Boys in a Boy's Camp, M. Ann. District of Columbia **7**: 187-190, 1938. (*d*) Wright, W. H.; Brady, F. J., and Bozicevich, J.: Studies on Oxyuriasis: XIV. Controlled Tests with Various Methods of Therapy, Pub. Health Rep. **54**: 2005-2016, 1939. (*e*) Brady, F. J., and Wright, W. H.: Studies on Oxyuriasis: XVIII. Symptomatology of Oxyuriasis as Based on Physical Examinations and Case Histories on 200 Patients, Am. J. M. Sc. **198**: 367-372, 1939. (*f*) Pinworms, bulletin 51, Health Information Series, Public Health Service, U. S. Department of Health, Education, and Welfare, 1954.

3. Sisk, W. N.: Effect of Phenothiazine on Intestinal Parasites, J. A. M. A. **122**: 357-360 (June 5) 1943.

4. Pryor, H. B.: Oxyuris Vermicularis: Most Prevalent Parasite Encountered in Pediatrics, J. Pediat. **46**: 262-267, 1955.

5. Manson-Bahr, P.: Phenothiazine as an Anthelminthic in Threadworm and Roundworm Infections, Lancet **2**: 808-809, 1940.

6. El-Din, G. N.: Recent Advances in Treatment of Intestinal Parasites, J. Roy. Egyptian M. A. **34**: 449-451, 1951.

7. Correction: Antihistamines, Medical News, J. A. M. A. **158**: 1379 (Aug. 13) 1955.

7A. Norman, E. C.: Personal communication to the author.

7B. Wright, W. H.: Personal communication to the author.

8. White, R. H. R.: Worms, M. Press **232**: 429-434, 1954.

9. Schüffner, W. A. P.; Swellengrebel, N. H., and Bool, J.: Retroinfection in Oxyuriasis: Conclusions, J. Parasitol. **36**: 391-393, 1950.

ORAL MUCOSAL SMEARS IN DETECTION OF GENETIC SEX

Robert B. Greenblatt, M.D., Oscar Mateo de Acosta, M.D., Efraín Vázquez, M.D.
and
Dewitt F. Mullins Jr., M.D., Augusta, Ga.

The skin biopsy test for chromosomal sex as an aid to differential diagnosis in errors of sex development such as hermaphroditism and gonadal dysgenesis has been greatly simplified and the accuracy increased. The use of smears from the oral mucosa circumvents the inconvenience of obtaining skin biopsy specimens and the staining difficulties occasionally encountered. Smear preparations are easier to interpret than skin biopsies and require less experience in cytology.[1]

Severinghaus in 1942 [2] studied the chromosomal sex of a human intersexual and was able to identify the 46 autosomes and the allosomes XY in the spermatic series of the testicular biopsy specimen taken from this individual. It was later demonstrated on an experimental basis [3] that it was possible to detect the chromosomal sex in intermitotic nuclei by the presence in most of the nuclei in females of a distinct mass of chromatin that is very seldom found in the nuclei in males. This finding

From the Department of Endocrinology, Medical College of Georgia. This study was aided by a grant from Ciba Pharmaceutical Products, Inc., Summit, N. J.

• *In the nuclei of most cells from females there is found a distinct mass of chromatin that corresponds to the sex chromosome. It is genetically determined, has been observed in cells from every type of female human tissue studied, and is very seldom found in the nuclei in males. These facts were verified in a study of 125 normal people of various ages by obtaining scrapings from the inner surface of the cheek with the edge of a tongue depressor. The scrapings, fixed and stained for microscopic examination, made it possible to tell the sex of the donor correctly in every normal case.*

The test was also applied to three female pseudohermaphrodites, one male pseudohermaphrodite, and one eunuchoid female with gonadal dysgenesis. In these five instances the genetic sex agreed with the gonadal sex. The test yields valuable information, and for this purpose the Papanicolaou technique proved very useful, although the Papanicolaou stain was less satisfactory than cresyl violet.

proved to be true in several mammals, including man, having been found in every tissue studied.[4] Moore and Barr [5] and Marberger and Nelson [6] demonstrated the utility of skin biopsy in the study of pseudohermaphroditism, Polani and co-workers [7] in Turner's syndrome, and Wilkins and co-workers [8] in ovarian agenesis. After the report of Moore and Barr, we undertook the study of oral mucosal smears to test their reliability and practical value when performed by the general pathologist or the relatively inexperienced investigator.

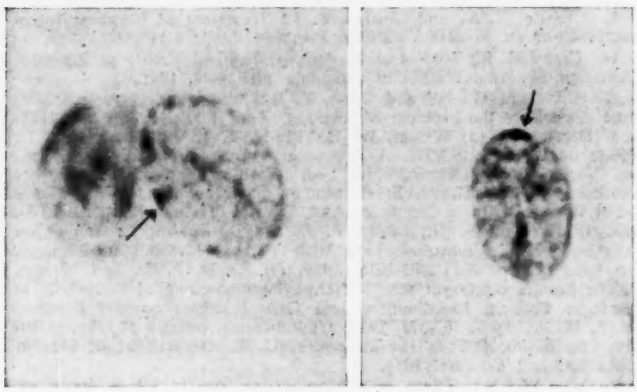


Fig. 1.—Typical appearance of the "sex chromatin" (cresyl-echt-violet staining) in female cells.

Materials and Method

Smears from the oral mucosa were taken at random from patients in the wards and the outpatient department of the University Hospital. Material was obtained by scraping the inner surface of the cheek with the edge of a tongue depressor and was spread on glass slides. The slides were immediately fixed by immersion in alcohol-ether mixture (equal parts). The study was performed on 125 normal individuals, three female pseudohermaphrodites, one male pseudohermaphrodite, and one eunuchoid female with gonadal dysgenesis. This series included children, adults, and aged people. Parallel studies were run by two different staining methods in order to compare their efficacy. One series was stained by the Papanicolaou technique, because of its general availability, and the other with cresyl violet as described by Moore and Barr [1a]: 1. Fix in alcohol-ether for 2 to 24 hours. 2. Hydrate the slides by subsequent passage through 70% and 50% alcohol, then distilled water—five minutes in each. 3. Stain in 1% solution of cresyl violet for 10 minutes. 4. Differentiate in 95% alcohol and dehydrate in dehydrated alcohol. (Note. It is better to accomplish this differentiation on each separate slide by slowly dropping alcohol on it, because rinsing it in alcohol frequently removes all the dye.) 5. Clear in xylene. 6. Mount in balsam.

Once stained, the slides, without reference to the sex of the subjects, were studied under oil immersion. Only those slides that were satisfactorily stained by the cresyl violet were included, and counts were made of those cells in which the nuclei were clear. One hundred such cells were counted, and the percentage of cells containing the sex chromatin was obtained. Numerical results were subjected to statistical analysis.[9]

Results

In smears obtained from females, a very distinct mass of chromatin, deeply stained, is found in the nucleus of the mucosal cells. This mass is round or biconvex in shape, lies beneath the nuclear membrane, and is approximately 1 μ in size (fig. 1). Sometimes it is present in other parts of the nucleus [1a] and may be located centrally or midway between the center and the membrane. The most typical location is the peripheral one, and our counts are based on this appearance because we feel that it is a more reliable criterion. This mass is very seldom seen in the male nucleus. Figure 2 shows typical male nuclei. In general, in our hands, the cresyl-violet staining method proved more suitable than the Papanicolaou method, because the sex chromatin could be more constantly identified. The Papanicolaou technique proved somewhat capricious in that in some batches the nuclear staining was not definitive enough. Although the technique proved erratic, it is only fair to say that on many occasions the sex chromatin was more clearly demonstrable with it than with the cresyl-violet technique.

In the female group we found a mean value of 49.1% $\pm$ 14.14, with a standard error of 1.98 cells with the sex chromatin. In the male group the mean value was 2.78% $\pm$ 1.98, with a standard error of 0.266. The comparison of these two groups gave a value for "t" (degree of statistical significance) of 7.69, which indicates that the difference is highly significant and therefore due to the different sex of the subjects. In one of the female pseudohermaphrodites we found 68% of nuclei with the sex chromatin; in the other one the percentage was 44, while in the male pseudohermaphrodite we found only 1%. In the case of the eunuchoid female with gonadal dysgenesis the percentage was 54. This latter case has been reported by one of us and co-workers,[10] and the

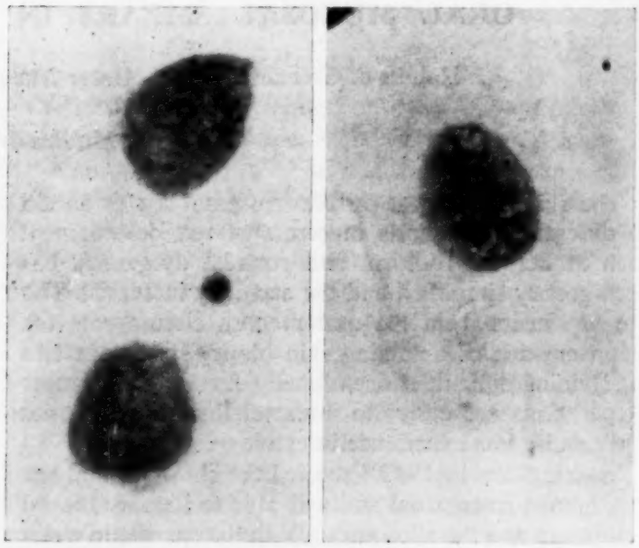


Fig. 2.—Male cells devoid of "sex chromatin" (cresyl-echt-violet staining).

female chromosomal sex pattern was confirmed by Grumbach and also by Barr, who studied the oral mucosal smear and obtained a count of 70%. This case differs from the cases of gonadal dysgenesis recently reported by Gordon and co-workers [11] and those of Grumbach and co-workers [12] in which male sex nuclei were demonstrated. Results of the skin biopsy study in our case

of the eunuchoid female with gonadal dysgenesis coincided with the results of oral mucosal smears. This finding was confirmed by Marberger and Nelson.

The diagnosis of the sex as determined by the slides was correct in 100% of our cases. There were a few cases that had to be eliminated from the study because of faulty technique in obtaining the smears or because of poor staining characteristics or bacterial contaminants. One case eliminated from the cresyl-violet study was that of a 5-year-old female pseudohermaphrodite. After the slide of this patient was stained with cresyl violet, it was found to have too little material for proper staining and could not be evaluated. A repeat slide could not be obtained, as the patient had already left the city. However, the Papanicolaou-stained smear excellently showed a female chromosomal pattern. It must be mentioned that, when there is a great number of bacteria in the oral mucosa, interpretation is very difficult.

Comment

A most probable hypothesis has been entertained to explain the presence of the sex chromatin in female nuclei and its absence in the male.[12] It has been suggested that the mass may be formed by some parts of heterochromatin belonging to the XX chromosomes of the female. For one or another reason this chromatin mass is not formed by the XY chromosomes of the male. Whatever the actual explanation may be, the presence or absence of the so-called sex chromatin serves to identify the genetic sex of the individual. The results reported in this paper show clearly that the simple method of the oral mucosal smear is a reliable and most convenient one, not requiring any special technical skill. It may be readily repeated when necessary without the inconvenience of a repeated skin biopsy. However, it is necessary to point out that the reliability of the method is dependent upon minimal technical precautions; i. e., a thin smear must be obtained, drying before fixation must be avoided, and the chromatin must be carefully differentiated. With these precautions, the oral mucosal technique is perhaps more reliable than the skin biopsy method. It is felt that the interpretation of the smears does not require as much skill as the method of Davidson and Smith,[13] utilizing the polymorphonuclear cells in a blood smear.

Summary

Oral mucosal smears were studied in 125 sexually normal patients of both sexes, three female pseudohermaphrodites, one male pseudohermaphrodite, and one eunuchoid female with gonadal dysgenesis. The so-called sex chromatin was found in 49.1% of the nuclei in the females studied and in only 2.78% of the male group. In the abnormal cases the results were in accordance with the gonadal sex. We are in agreement with the proponents of this test that it is reliable and fairly simple. Our results were in accord with known sex of the patients in every instance in which the smears were suitably stained.

The Papanicolaou technique proved very useful, and in many instances the sex chromatin was more clearly demonstrated than with the cresyl violet, but in general the Papanicolaou stain was not as satisfactory as cresyl violet, as the staining quality of the former was, at times, inconstant and erratic. Nevertheless, it is worthwhile submitting smears to both staining methods in case one or the other does not prove completely satisfactory.

1. (*a*) Moore, K. L., and Barr, M. L.: Smears from the Oral Mucosa in the Detection of Chromosomal Sex, Lancet **2**: 57 (July 9) 1955. (*b*) Marberger, E.; Boccabella, R. A., and Nelson, W. O.: Oral Smear as a Method of Chromosomal Sex Detection, Proc. Soc. Exper. Biol & Med. **89**: 488 (July) 1955.

2. Severinghaus, A. E.: Sex Chromosomes in a Human Intersex, Am. J. Anat. **70**: 73 (Jan.) 1942.

3. Barr, M. L.; Bertram, L. F., and Lindsay, H. A.: The Morphology of the Nerve Cell Nucleus, According to Sex, Anat. Rec. **107**: 283 (July) 1950. Moore, K. L., and Barr, M. L.: Morphology of the Nerve Cell Nucleus in Mammals, with Special Reference to the Sex Chromatin, J. Comp. Neurol. **98**: 213, 1953.

4. Graham, M. A., and Barr, M. L.: A Sex Difference in the Morphology of Metabolic Nuclei in Somatic Cells of the Cat, Anat. Rec. **112**: 709 (April) 1952.

5. Moore, K. L., and Barr, M. L.: Nuclear Morphology, According to Sex, in Human Tissues, Acta anat. **21**: 197, 1954.

6. Marberger, E., and Nelson, W. O.: Sexual Differences in Epidermal Nuclei of Human Skin, abstracted, Anat. Rec. **118**: 399, 1954.

7. Polani, P. E.; Hunter, W. F., and Lennox, B.: Chromosomal Sex in Turner's Syndrome with Coarctation of Aorta: Preliminary Communication, Lancet **2**: 120 (July 17) 1954.

8. Wilkins, L.; Grumbach, M. M., and Van Wyk, J. J.: Chromosomal Sex in "Ovarian Agenesis," letter to the editor, J. Clin. Endocrinol. **14**: 1270 (Oct.) 1954.

9. Snedecor, G. W.: Statistical Methods Applied to Experiments in Agriculture and Biology, ed. 4, Ames, Iowa, Iowa State College Press, 1946, pp. 1-88.

10. Greenblatt, R. B.; Carmona, N., and Higdon, L.: Gonadal Dysgenesis with Androgenic Manifestations in the Tall Eunuchoid Female, J. Clin. Endocrinol. **16**: 235 (Feb.) 1956.

11. Gordan, G. S.; Overstreet, E. W.; Traut, H. F., and Winch, G. A.: A Syndrome of Gonadal Dysgenesis: A Variety of Ovarian Agenesis with Androgenic Manifestations, J. Clin. Endocrinol. **15**: 1 (Jan.) 1955.

12. Grumbach, M. M.; Van Wyk, J. J., and Wilkins, L.: Chromosomal Sex in Gonadal Dysgenesis (Ovarian Agenesis): Relationship to Male Pseudohermaphrodism and Theories of Human Sex Differentiation, J. Clin. Endocrinol. **15**: 1161 (Oct.) 1955.

13. Davidson, W. M., and Smith, D. R.: A Morphological Sex Difference in the Polymorphonuclear Leucocytes, Brit. M. J. **2**: 6 (July 3) 1954.

Evolution and Sexual Reproduction.—Obviously sex is not necessary for the continuance of a race. Many primitive organisms divide and reproduce without sexual differentiation. Even in higher animals parthenogenesis may take place. The drone bee has no father. . . . Why then has sexuality been adopted by all the higher species? The union of two individuals has two major effects. One is that, by Mendel's law of independent assortment, separate characters previously found in two different individuals may meet in the next generation and appear together in the same individual. Sexuality thus produces the new variants on which the process of evolution can act by natural selection. Darwin, who thought heredity to be a blending of characters instead of a reassortment, was aware of this difficulty to the acceptance of his theory of evolution; for a blended heredity would lead to uniformity. Tall and dwarf peas, for instance, would in the subsequent generations all end up as medium in height. He therefore postulated that sudden unpredictable variations, or mutations as we would now call them, were very important for evolution. We can now see that this is not so. Sex plus particulate inheritance—the gene system in fact—produces most of the necessary variation. Natural selection will favor the survival of new and advantageous products of sexual reproduction. Inbreeding within a small population will tend to limit the number of variants and new patterns, whereas outbreeding will increase them. This is no doubt one reason why we find in Nature many devices to discourage inbreeding. . . . Sexuality has, however, another major effect, somewhat in the opposite direction. It provides that all individuals are diploid—that is, they have a double set of genes and chromosomes. This makes for stability in the race; for new mutations, which are usually disadvantageous, are usually recessive and are not immediately apparent. It has, in fact, been calculated that a new mutation occurring today, either spontaneously or as a result of all the radiation at present being released in the world, would be unlikely to show itself for some 500 years. But this is no reason why we should neglect the problem; and of course a cousin marriage might bring two mutant recessive genes together much more quickly.—R. Platt, M.D., M.Sc., F.R.C.P., Life (Biological, Not Biographical), *The Lancet*, Jan. 14, 1956.

PHYSIOLOGICAL APPROACH TO AMBULATION IN PARAPLEGIA

Edward E. Gordon, M.D., New York

• *The intensity of effort involved in crutch walking was measured in 11 patients who represented three types of paraplegia. The measurements concerned the rate of oxygen consumption, the amount of the oxygen debt, and the concentration of lactic acid in the blood. Data from normally ambulant persons were obtained for comparison.*

Some patients were found to be so severely handicapped that they showed an unfavorable balance between total energy cost and ability to meet it for a given speed of ambulation; in others the balance was favorable. In some patients, crutch walking with a swing-through gait on a continuous basis produced exhaustion comparable to that seen in a normal person performing a 440-yd. run.

Ambulation was seen to be impractical as a usual mode of progression for some paraplegic persons. Vocational training in a wheel chair is, for the more severely involved patients, better than demanding prolonged heroic efforts in a fruitless attempt at sustained ambulation.

Those with paralysis of the lower extremities due to brain damage and anterior poliomyelitis have long presented a problem in management in respect to self-care. Patients surviving traumatic myelopathy have further swelled the ranks of paraplegic patients as a result of advances in surgery and antimicrobial therapy made during World War II. With the expansion and perfection of various rehabilitation techniques at this time, great emphasis was placed upon mastery of crutch ambulation as a routine means of locomotion. The practical benefits arising from a planned rehabilitation program led to the training of all paraplegic patients in this activity. Clinical experience in the past 10 years, however, has shown that many so disabled gave up crutch walking as too exhausting a form of progression and preferred to carry out the business of living from a wheel chair. The reason is not far to seek.

In paraplegic patients, though training increases work capacity to an extent, the available muscle mass for delivery of energy is restricted. Long and Lawton [1] have pointed out on theoretical grounds the inherent difficulties of continuous ambulation due to loss of muscle function at various levels of transverse myelopathy. It may, therefore, be expected that in certain individuals the metabolic price for ambulation may be too high compared to their ability to pay, as the brunt of the effort falls upon the relatively small scapulohumeral musculature. It was of interest to extend these kinesiological inferences by actually studying in paraplegic patients the capacity for and limitation to ambulation from the direct point of view of energy metabolism, since this activity for many appears comparable to severe muscular work.

Many studies in normal persons have thrown light on the metabolic events in prolonged strenuous effort. During exercise, oxygen consumption per minute rises to satisfy the increased energy requirements. These requirements may be further met by anaerobic delivery of energy, which later must be repaid in the postexercise recovery period by an extra oxidative process, i. e., the oxygen debt. With high debts excess lactic acid appears in the blood. In each individual the intensity and amount of work possible is limited by the maximal oxygen consumption per minute attainable and by the maximal oxygen debt capable of being contracted. These ceilings on strenuous work depend upon the magnitude of muscle mass involved and the state of training. Such considerations were extended to paraplegic patients long trained in ambulation.

Method

Eleven patients were studied representing three types of paraplegia; five had poliomyelitis, four had transverse myelopathy, and two had cerebral spastic infantile paralysis. The clinical factors and extent of previous training in ambulation are summarized in the table. Each patient (except patient in case 4) was tested at various speeds including his maximum while executing the swing-through gait (the braced legs swing forward in an arc beyond the crutches, which are then advanced to check the forward motion of the body). The maximal speed afforded data on the ultimate limit of oxygen consumption per minute and of oxygen debt. During activity, timed collection of expired air was carried out to determine oxygen uptake per minute (aerobic work). At the end of the period of ambulation, usually measuring four to five minutes, additional collections of expired air were carried out for three to four minutes to ascertain the oxygen debt (anaerobic work). These two components of physiological work gave the total energy requirements. Blood lactate concentrations were also measured. Details of these determinations have been previously described.[2]

Results

Typical findings in all paraplegic patients are illustrated by those of two patients, one showing an unfavorable the other a favorable balance between total energy cost and ability to meet it for a given speed of ambulation. Data derived from findings of normal persons were included for comparison.[3] Figures 1 and 2 summarize the events.

The patient in case 8 (see table), in ambulating 1.64 miles per hour for 3.8 minutes, negotiated a distance of 550 ft. at an average total energy cost equivalent to 1.63 liters of oxygen consumption per minute. Average aerobic oxygen consumption measured 1.19 liters per minute during this time. The remaining 0.44 liter per minute was supplied by the cumulative anaerobic processes amounting to a total of 1.7 liters of oxygen in 3.8 minutes. But the most his aerobic processes could supply

From the Medical Service of the Institute for the Crippled and Disabled and the Department of Physical Medicine and Rehabilitation, College of Physicians and Surgeons, Columbia University. Dr. Gordon is now at the Michael Reese Hospital, Chicago.

This work was supported by a grant from the Public Health Service, Institute for Neurological Diseases and Blindness.

was found to be 1.5 liters of oxygen per minute as against 1.19 liters per minute used (fig. 1*A*). Similarly, the ceiling to his oxygen debt was determined as 2 liters as against 1.7 liters of oxygen debt actually incurred (fig. 1*B*). Thus, at 1.64 miles per hour there was little reserve left for both aerobic and anaerobic delivery of energy for muscle work. Significantly, he had but one minute to spare before reaching the ultimate limit for his allowable debt. The cardiovascular stress in meeting this great effort was indicated by the excessive rise in pulse rate to over 130 (fig. 1*A*). In addition, the marked increase of blood lactate concentration to 70 mg. per 100 cc. in the fifth minute after cessation of exercise also attests to the strenuous nature of the activity (fig. 1*B*). Thus, the patient was working near his top potential and could not have continued for more than a total of five minutes, dur-

Pertinent Clinical Factors at Beginning of Study

Case	Age	Diagnosis	Duration of Disease, Yr.	Extent of Disability and Bracing *	Previous Ambulating with Crutches
1	18	Poliomyelitis	6	Lower extremities O; trunk flexor P, extensor G; upper extremities G to N; intercostal muscles impaired; long leg braces with pelvic band and Knight brace.	48 mo.
2	22	Poliomyelitis	3	Lower extremities O; lower trunk O, upper trunk N; long leg braces with pelvic band and Knight brace.	30 mo.
3	18	Poliomyelitis	6	Lower extremities O; trunk flexor P, extensor F; long leg braces with pelvic band and Knight brace.	36 mo.
4	28	Poliomyelitis	4½	Lower extremities O; trunk flexor O to P, extensor G to N; bilateral long leg braces.	48 mo.
5	40	Poliomyelitis	5½	Lower extremities O; long leg braces with pelvic band.	5 yr.
6	44	Myelopathy, traumatic	10	Physiological level—T-4; long leg braces with pevic band and Knight brace.	10 yr.
7	32	Myelopathy, traumatic	3	Physiological level—T-8; long leg braces with pelvic band.	30 mo.
8	31	Myelopathy, syphilitic and traumatic	5	Physiological level—T-8; long leg braces. Severe spasticity.	48 mo.
9	26	Myelopathy, traumatic	3½	Injury of conus and cauda equina with physiological level at L-1 and flaccidity; long leg braces.	24 mo.
10	19	Cerebral spastic infantile paralysis	..	Spastic lower extremities, minimal involvement of upper extremities; no braces.	15 yr.
11	19	Cerebral spastic infantile paralysis	..	Spastic lower extremities; no involvement of upper extremities; no braces.	4 yr.

* O = complete loss of function; P = poor function; F = fair; G = good; N = normal.

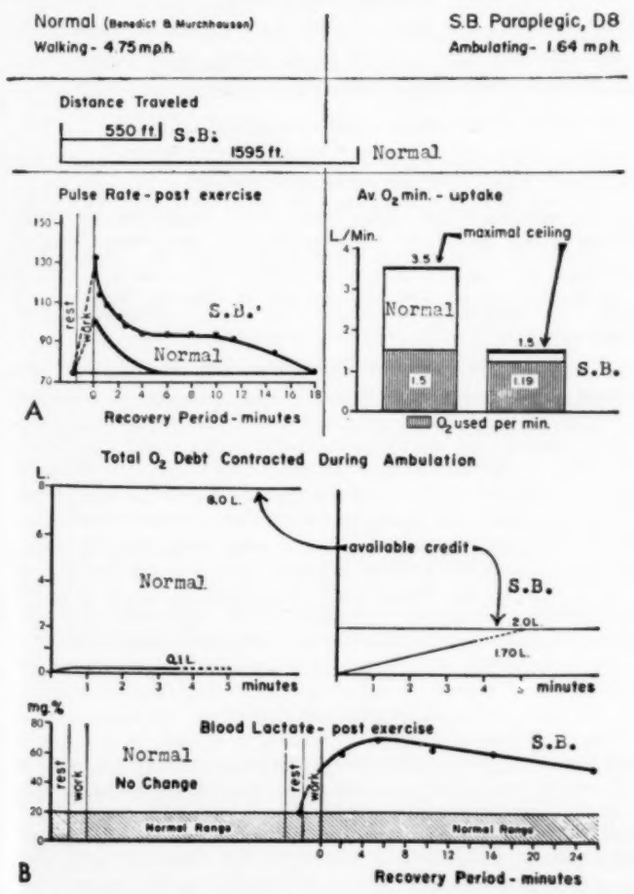


Fig. 1.—Comparison at a total energy cost equivalent to 1.63 liters of oxygen consumption per minute in patient in case 8 (S. B., above) and in normal person during ambulation for 3.8 minutes. *A*, data on aerobic processes, pulse rates, and speeds and distances of locomotion. *B*, determinations of oxygen debt and blood lactate concentration after cessation of exercise.

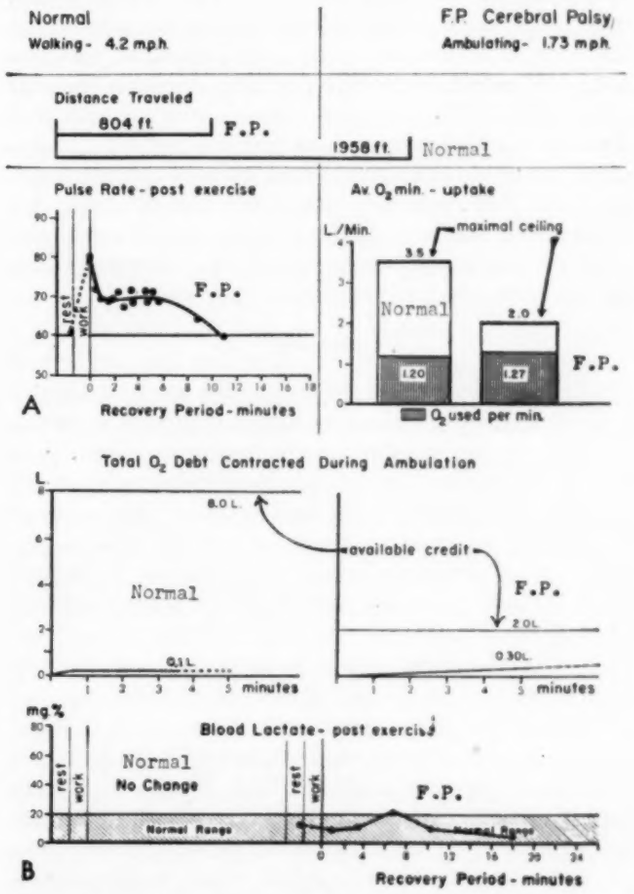


Fig. 2.—Comparison at a total energy cost equivalent to 1.33 liters of oxygen consumption per minute in patient in case 10 (F. P., above) and in normal person during ambulation for 5.3 minutes. *A*, data on aerobic processes, pulse rate, and speeds and distances of locomotion. *B*, determinations of oxygen debt and blood lactate concentration after cessation of exercise.

ing which time he would have negotiated, with supreme effort, only a little over 700 ft. By contrast, the normal subject was working with greater efficiency and well within his potential.

A favorable balance sheet was displayed by the patient in case 10, with cerebral spastic infantile paralysis, ambulating at the rate of 1.73 miles per hour. The metabolic data demonstrated that he was doing moderate work at this speed. In figure 2*A* are presented the distance traveled, postexercise pulse rate, and oxygen uptake per minute associated with a period of ambulation for 5.3 minutes. It is to be noted that oxygen uptake per minute was well below his ceiling and cardiovascular stress was moderate. The total oxygen debt compared to the maximum was low and no excess lactic acid appeared in the blood (fig. 2*B*). This patient compared favorably with a normal person. The data indicate that he could have readily negotiated more than 804 ft. and, hence, crutch ambulation would be practical for him. This prediction is realized in his daily living.

Similar analyses of energy requirements for a given speed in comparison to the maximal potential for energy production revealed that the patients in cases 1, 5, 6, and 7 (see table) shared the same difficulties as the patient in case 8 above. Findings of three other patients (cases 4, 9, and 11) were analogous to those of the patient in case 10, discussed above, and the patients in cases 2 and 3 fell into a position intermediate between the two groups. From the point of view of residual function, the physiological evidence indicated that three paraplegic patients with spinal cord lesions at or above the eighth thoracic vertebra could not ambulate for any practical duration. In four poliomyelitis patients (cases 1 to 4), it was found that capacity to ambulate increased with the amount and degree of remaining functional back extensors (antigravity muscles). This was not true in one patient (case 5). Although he was less disabled as far as the trunk was concerned, the aging process may have contributed to his impaired physiological reserve.

Comment

It is evident that lowered capacity for physical activity roughly parallels the extent of neurological deficit. When this is severe the metabolic price for ambulation is prohibitive and renders ambulation as a routine part of the rehabilitation program unfeasible. In fact, judging from the capacity for continued muscular work in some patients, a swing-through gait on a continuous basis produced exhaustion analogous to that of a normal individual performing a 440-yd. run.

It is, consequently, necessary to modify our thinking in regard to paraplegia and accept the idea that routine ambulation for all is impractical. In the past decade, literally months to years were wasted in daily drills for ambulation, elevation, and the like. Too many paraplegic patients have been kept at impressive but impractical gymnastics. Candidates must be selected particularly according to anatomic deficit. Aging is also important; it respects neither the able-bodied nor the disabled and inevitably reduces the capacity for strenous effort. Once it is clear that a particular paraplegic patient shows physical inability to master ambulation on a practical basis, emphasis should be shifted in the early phases of rehabilitation away from this activity. In such instances, physical training ought to be reduced to the goal of standing and taking a few steps to maintain physiological balance of bone and muscle and to carry out self-care missions. It is not that short bursts of strenuous activity are interdicted but that prolonged ambulation is prohibitive because it demands physiological activity at maximal levels.

When indications are present for a minimal physical program, rehabilitation efforts ought to be expanded toward more constructive goals. Vocational training undertaken earlier will cut down time and cost of inpatient preparation and lengthen the period of productivity.

Summary and Conclusions

Ambulation for some paraplegic patients as a usual means of progression is impractical, as it involves severe physiological stress and can not be maintained to cover significant distances. Paraplegic patients for full-scale ambulation must be selected on the basis of anatomic involvement: those with large trunk deficits will probably fail; those with involvement of only trunk flexors or with cord lesions below the 12th thoracic or the first lumbar vertebra will probably succeed. Age also reduces work tolerance. This restriction does not preclude standing and walking short distances merely as an exercise to maintain physiological balance and carrying out self-care activities. For the severely involved, it is more constructive to devote the bulk of time to vocational training in a wheel chair rather than to demand prolonged heroic efforts in a fruitless attempt at sustained ambulation.

29th Street and Ellis Avenue, Chicago (16).

1. Long, C., II, and Lawton, E. B.: Functional Significance of Spinal Cord Lesion Level, Arch. Phys. Med. **36**: 249, 1955.

2. Gordon, E. E.: Energy Costs of Various Physical Activities in Relation to Pulmonary Tuberculosis, Arch. Phys. Med. **33**: 201, 1952. Gordon, E. E., and Haas, A.: Energy Cost During Various Physical Activities in Convalescing Tuberculous Patients, Am. Rev. Tuberc. **71**: 722, 1955.

3. Benedict, F. G., and Murchhausen, H.: Energy Transformation During Horizontal Walking, Publication no. 231, Carnegie Institute of Washington, 1915.

Funnel Chest and Pigeon Breast.—The currently accepted explanation of the causation of funnel chest (Brown, 1939; Lester, 1950) is that a congenitally short central tendon of the diaphragm pulls the sterno-xiphisternal junction backwards, the sternum and rib cartilages inevitably taking up the positions seen in the established deformity. There are several objections to this belief, one of the most potent being that, at operation, the diaphragm appears substantially normal. Furthermore, it is noticeable that the two deformities, funnel chest and pigeon breast, may occur in different members of the same family, apparently the one defective gene being responsible for both conditions. Thus any etiology suggested for funnel chest should be susceptible of application to pigeon breast—two deformities almost literally diametrically opposed. A feasible suggestion, perhaps, is that certain elements of a normal diaphragm, acting on a thoracic cage which is primarily of abnormal shape, obtain anomalous mechanical advantages and lead to the production of the further more localized deformities under discussion. In a chest somewhat flattened anteroposteriorly the transverse diaphragmatic pull results in posterior buckling of the anterior chest wall, and hence the production of a "funnel"; whilst in one compressed from side to side the same force induces a "pigeon" formation. Funnel chest occurs preponderantly in males, and a family history is generally obtainable.—R. Howard, M.D., F.R.C.S., F.R.A.C.S., Funnel Chest: Report of a Series of One Hundred Cases, *Medical Journal of Australia*, Dec. 31, 1955.

VARIED MANIFESTATIONS OF DISSECTING ANEURYSM OF THE AORTA

Samuel Baer, M.D., Philadelphia

• *Dissecting aneurysm of the aorta was correctly diagnosed ante mortem in 34 out of 86 patients who were found at autopsy to have this condition. Its symptoms are extremely varied. Pain, which was excruciating in some patients, was absent in 42 of the 86. The syndrome may be described as cardiovascular, pulmonary, abdominal, renal, or neurological, depending on the dominant group of symptoms and signs. To the neurological syndrome belong shock, hemiplegia, coma, confusion, psychosis, and bizarre neurological defects that may draw attention away from the more essential findings. The bizarre neurological signs, with or without sudden thoracic or abdominal pain, with dyspnea, a diastolic bruit, and hemothorax on the left, were valuable diagnostic signs. Fifty of the 86 cases were in men over 50 years old. Increasing attention to these facts in older patients with hypertension should improve the accuracy of diagnosis and the prospects of successful treatment.*

As we become more familiar with the clinical and pathological features produced by dissection of the aorta, it is apparent that this condition is neither as rare nor as invariably fatal as first considered. Interest in dissecting aneurysm of the aorta was stimulated by the monograph written by Shennan in 1934.[1] Adding 77 cases collected throughout all England to those already reported in the medical literature, he reviewed a total of 302 cases. In only six was the correct diagnosis suspected during life. As hospital autopsy records [2] and individual reports of verified cases accumulated, the number diagnosed ante mortem slowly increased.

Logue [3] diagnosed 10 of his 12 cases ante mortem. In the first group of 44 cases I reported on with Goldburgh,[4] the correct antemortem diagnosis was made in 11, or 25%. Since then I have studied 42 additional cases of dissecting aneurysm, of which 54% were diagnosed during life. In the entire series of 86 cases, 34, or 40%, were diagnosed and confirmed by autopsy. This question of correct diagnosis is a matter of more than academic pride. Until we learn to recognize recovered cases of dissecting aneurysm, and there may be many such, we cannot determine its true incidence. Weiss and associates [5] and Gouley and Anderson [6] reported chronic cases of aortic dissection. Levine and associates [7] recently described two cases of dissection of the aorta that resembled chronic rheumatic heart disease and were treated as such for months. Sando and Helm [8] reported that a double-barreled aorta developed as a result of a dissecting aneurysm and that subsequent aortic coarctation occurred in the region of the dissection. I have seen and others have reported the development of advanced arteriosclerotic lesions in the new aortic channel. Soma Weiss long ago suggested that perhaps one out of 10 patients with dissecting aneurysm may recover and die from some other cause.

With the tremendous advances occurring in the field of cardiovascular surgery, it is quite reasonable to expect many of these cases may be amenable to surgical correction. It is with this thought in mind that I have reviewed the clinical and pathological findings in 86 cases of dissecting aneurysm. As Reich [9] stated in 1944: "It is only through relentless correlation of postmortem findings with the clinical picture in individual cases, that a true clinical consciousness of the disease can be adequately established."

Clinical Features

As already mentioned, the actual incidence of this condition is difficult to determine. In many cases death is instantaneous and the patient never reaches a hospital. Mote and Carr [10] stated that 1.1% of all cases of sudden death were due to dissecting aneurysm. Gouley found dissecting aneurysm to occur once in every 480 cases autopsied at Philadelphia General Hospital, and a slightly smaller incidence was found at Massachusetts General Hospital.

Age and Sex.—The age and sex incidence in the group reported on herein is seen in table 1. Two-thirds of the cases occurred in men, and about 85% of the patients were past the age of 50 years. Shennan's [1] figures were practically identical. However, we must consider the data presented by Schnikter and Bayer [11] who found, after an exhaustive review of almost 600 cases in 1943, that 24% occurred in persons less than 40 years of age. They also emphasized the occurrence in women during pregnancy. The youngest patient in this series, a man aged 23 years, had a congenital coarctation of the aorta. Of the other 13 cases occurring in patients under the age of 50 years, in 8 there was a clinical course suggestive of previous malignant hypertension.

Symptoms.—A number of observers have published excellent clinical descriptions of the symptoms encountered (fig. 1).[12] The patient is usually seized with a sudden, severe, tearing, excruciating, or ripping pain in the precordium. The pain may become progressively more severe and respond only slightly to massive doses of narcotics. It may radiate to the head, neck, shoulders, back, abdomen, or groin. The sequence of the pain and the type of radiation may be very significant and may at times actually be diagnostic. It must be remembered however, that many cases have been reported [13] in which pain was not found during the entire course of the illness. Only 51% of the patients in this series complained of pain at any time. One must appreciate that many patients are admitted confused, comatose, or in a state of shock and may not be able to give an adequate history.

Senior Attending Physician, Albert Einstein Medical Center; Cardiologist, Northeastern Hospital; and Associate Physician, Philadelphia General Hospital.

Read before the Ninth Clinical Meeting of the American Medical Association, Boston, Nov. 30, 1955.

Dyspnea is also a prominent symptom. It is understandable why many cases, particularly those in which pain may be a minor symptom or be entirely absent, resemble cardiac disease and are not recognized as cases of dissecting aneurysm. I was impressed by the frequency of cerebral and neurological disturbances as the important or sole manifestations of dissecting aneurysm. Shock, hemiplegia, coma, confusion, psychosis, or bizarre neurological defects may be present and distract us from considering the primary diagnosis. Niehaus [13b] and, more recently, Moersch and Sayre [14] have emphasized these neurological abnormalities.

TABLE 1.—*Age and Sex of Eighty-Six Patients with Dissecting Aneurysm*

Age, Yr.	Sex		Total	
	Male	Female	No.	%
20-29	1	..	1	1.1
30-39	..	3	3	3.5
40-49	6	4	10	11.6
50-59	24	7	31	36.0
60-69	16	6	22	25.5
70-79	9	6	15	17.4
80-89	1	3	4	4.6
Total	57	29	86	

Physical Findings.—The physical findings may vary considerably, depending upon the point at which the dissection begins, the age of the patient, the preexisting cardiac disturbance, and the length of time the patient survives. If death is not instantaneous, the majority of the patients have an elevation of temperature and tachycardia. Almost half of the patients in this series had tachypnea (fig. 2).

What part hypertension plays in the clinical picture is still controversial. A number of observers have stated that there may be no previous history of hypertension. In 8 of the patients in this series no blood pressure was recorded, 5 patients remained in shock, and 21 patients had a normal blood pressure. The remaining 60% exhibited hypertension, with systolic pressures ranging

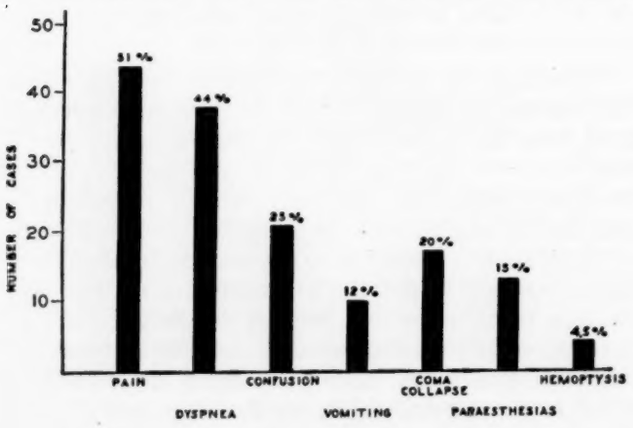


Fig. 1.—Symptoms in 86 cases of dissecting aneurysm.

from 150 to 300 mm. Hg and diastolic pressures from 100 to 180 mm. Hg. It is quite possible, of course, that some patients with hypotension or normal blood pressure were hypertensive prior to the development of aortic dissection.

In view of the critical condition of many of these patients on admission, it is difficult to assess the accuracy of the physical findings. Some showed evidence of cardiac failure. In many, cardiac enlargement, a gallop rhythm, or perhaps a suspicion of a pericardial friction rub was heard. It is easy to see why the primary diagnosis in some of the cases was cardiac failure or myocardial infarction. One important sign that may be almost pathognomonic of dissecting aneurysm is the development of the dias-

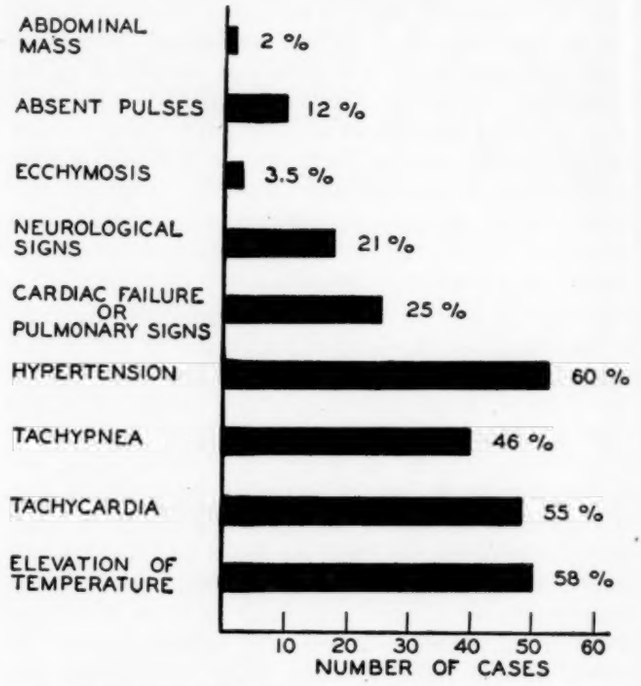


Fig. 2.—Physical findings in 86 cases of dissecting aneurysm.

tolic bruit of aortic regurgitation. Gouley and Anderson [6] and many others have called attention to this finding, particularly in chronic cases. The murmur is due to dilatation of the aortic ring or to retrograde dissection. When sought for diligently, the demonstration of this murmur may enable one to make the diagnosis.

In an occasional case an abdominal mass may develop, or a widespread ecchymosis as the blood leaks retroperitoneally. Some of the most bizarre findings are those that suggest a primary neurological entity. The symptoms and accompanying neurological abnormalities may indicate a cerebral accident, a primary hemiplegia, or a paraplegia. The neurological findings are the result of extension of the dissection to involve the intercostal, lumbar, femoral, or spinal arteries. They may be most marked in the legs. A periarterial sympathectomy may result and the entire process remain painless. A number of observers [15] have particularly stressed the neurological abnormalities resulting from aortic dissection.

Laboratory Studies.—It is difficult to generalize concerning the various laboratory abnormalities, since many of the patients died before detailed observations could be carried out. In the great majority of the cases in which tests were done, there was a marked polymorphonuclear leukocytosis. In an occasional case, severe anemia resulted from hemorrhage into the pleural sac, the pericardium, or the retroperitoneal area. Of the 30 cases in which blood urea nitrogen tests were done, 24 showed elevations ranging from 24 mg. to 300 mg. per 100 cc.

The development of uremia plus the demonstration of hematuria seen microscopically is very suggestive that the dissection has approached or actually involved the renal arteries.

The electrocardiographic changes are difficult to evaluate. It must be realized that many of these patients already had severe hypertensive or coronary artery disease before the aortic dissection developed. It would be expected, therefore, that the electrocardiogram would be abnormal in the majority of patients with dissecting aneurysm. The QRS, ST, and T-wave changes, however, are not specific. In an occasional case serial changes indicative of acute myocardial infarction evolved, and at times extension of the aortic dissection to the coronary arteries has been demonstrated at autopsy. However, a number of authors have reported cases in which the electrocardiograms suggested an acute myocardial infarction, without an infarction being demonstrated at autopsy. The roentgen examination may be of some help in confirming the diagnosis. Wood and associates [16] have described these signs in detail. Occasionally, the ability to demonstrate a progressive deformity or increase in the size of the aorta has led to the correct diagnosis of dissecting aneurysm.

Pathological Aspects.—For the sake of brevity, I need not consider in too great detail the various pathological abnormalities that may be found in dissecting aneurysm. Excellent discussions of the pathological features have been published by Shennan,[1] Moritz,[17] Leary and Weiss,[18] and, more recently, Gore and Seiwert.[19]

Allowing for the differences of opinion that have been expressed, it is generally agreed that the pathological sequence of events is somewhat as follows: The primary change is the development of an area of cystic degeneration in the media of the aorta, usually the proximal aorta. (This is the so-called Erdheim-Gsell medionecrosis cystica.) A rupture of a medial nutrient vessel into one of the cystic spaces produces a hematoma. This hematoma enlarges, splitting the layers of the media and then extending to the intimal coat. The rent in the aortic wall is then exposed to the large aortic column of blood, and dissection of various degrees occurs along the medial coat. This dissection may extend backward to the aortic cusps as well as distally. The various clinical syndromes produced will depend on the length of time the patient survives, the extent of the dissection, and the branches of the aorta involved. The shock may be so severe that death is instantaneous. If the great vessels arising from the arch are involved, cerebral symptoms may predominate. If the dissection progresses, death may result from rupture into the pericardium or pleural cavity (usually the left). An anterior spinal artery may be involved, yielding an "anterior spinal artery thrombosis syndrome." Mesenteric thrombosis may ensue. Involvement of one or both renal arteries yields hematuria, renal infarction, or uremia. If the dissection progresses still further, the entire abdominal aorta may be involved and autopsy reveal iliac or femoral artery thrombosis and perhaps gangrene of an extremity. Death usually results from shock, pericardial tamponade, rupture into the left pleural cavity, or uremia. In an occasional case, cardiac failure seems to be the dominant clinical finding. As a matter of fact, this is usually the mode of death in those cases listed as "chronic dissecting aneurysm."

Comment

It seemed to me, in the light of present knowledge, that a greater number of these cases might have been correctly diagnosed ante mortem. What makes the diagnosis obscure, and how can we more sharply define the clinical variants of dissecting aneurysm (table 2)?

As previously discussed,[4] I feel that the various manifestations of dissecting aneurysm of the aorta can be grouped into five clinical types—cardiovascular, pulmonary, abdominal, renal, and cerebral and neurological—and that each individual case may fall into one or more of these categories.

Cardiovascular Defects.—Most of the cases of aortic dissection resemble primary defects of the cardiovascular system. In 60 of the cases in this series the diagnosis was that of a primary cardiovascular disturbance. Either the dissection was correctly diagnosed or the case was considered to be one of hypertensive disease, arteriosclerosis, cardiac failure, or myocardial infarction. This difficulty in differential diagnosis is quite understandable. Many of these patients are known to be hypertensive; some have a proved background of cardiac disease. The presence of hypertension, chest pain, evidence of cardiac failure, perhaps a friction rub, or the various physical signs of cardiac involvement—all may contribute to a diagnosis centered about the heart. In some cases a chronic or healed dissecting aneurysm may develop and severe cardiac enlargement become evident. Intractable failure may become manifest and little basis remain for suspecting a dissecting aneurysm. In an occasional case, the clinical picture may simulate saddle thrombosis or primary iliac or femoral thrombosis. The possibility of underlying thoracic or abdominal dissecting aneurysm may then be completely overlooked.

TABLE 2.—*Diagnosis in Eighty-Six Cases of Dissecting Aneurysm*

Primary		Secondary	
Dissecting aneurysm	27	Dissecting aneurysm	7
Hypertensive heart disease	17	Hypertensive heart disease	4
Cerebral accident	13		
Acute myocardial infarction	9	Coronary occlusion	6
Cardiac failure	5		
Arteriosclerotic heart disease	2	Arteriosclerosis	5
Embolism to femoral artery	2		
Uremia	2	Uremia	2
Bleeding ulcer	1	Bleeding ulcer	1
Pneumonia	1	Pneumonia	3
Carcinoma of esophagus	1		
Echinococcus cyst of liver	1		
Renal calculus	1	Renal calculus	2
Carcinoma of lung	1	Aortic aneurysm	1
Volvulus, ileitis	1	Lymphoma	1
Gastrointestinal obstruction	1		
Subarachnoid hemorrhage	1		

Pulmonary Disturbances.—Dissecting aneurysm may seem to be a serious pulmonary disturbance. There may be signs of fluid in the chest, and a diagnosis of pneumonia, malignancy, or pulmonary infarction may be made. In some patients thoracentesis was done for suspected tuberculous or cardiac effusion. The demonstration of hemothorax on the left should always make one at least consider the possibility of dissecting aneurysm.

Abdominal Symptoms.—Symptoms referable to the abdomen or the gastrointestinal tract may be prominent and at times be the only complaints. In many of those describing pain, the pain began in the abdomen. If dissection has extended to the mesenteric or gastric vessels, there may be hematemesis, melena, or mesenteric infarction. A diagnosis of abdominal neoplasm or peptic ulcer may be ventured. Finkelstein and Jacobi [20] have reported that the only symptom of dissecting aneurysm may be abdominal pain that simulates peptic ulcer. Some of the patients were suspected of having such conditions as peptic ulcer, carcinoma of the stomach or esophagus, or ileitis. Reich [9] found 21% of his patients had an abdominal tumor, and in many of these a diagnosis of abdominal malignancy was made.

Renal Symptoms.—Occasionally dissecting aneurysm may simulate renal calculus, renal infarction, or uremia. At times the renal symptoms may predominate. This is particularly so since pain in the back may be such a prominent symptom, coupled with hematuria seen microscopically and an elevation of the blood urea nitrogen level. In eight of the cases in this series renal symptoms were quite prominent. A number of cases have been reported in which hematuria and severe back pain were the outstanding complaints.

Cerebral and Neurological Complaints.—The last and very important group is of predominately neurological or neuropsychiatric complaints. This happened in 19 of the cases in this series. In view of the hypertension, one is apt to make a diagnosis of hypertensive encephalopathy, cerebral thrombosis, hemiplegia, or subarachnoid bleeding. I have already referred to the importance of the peripheral neurological findings. In one of the cases in this series, for example, the only symptom-complex that led to a correct diagnosis of dissecting aneurysm was the development of a sudden progressive painless paraplegia.

It is apparent from this discussion that it may be of considerable value to divide the syndromes produced by dissecting aneurysm into cardiac, pulmonary, abdominal, renal, and neurological types. This may be especially helpful diagnostically if more than one system seems involved. It is probable that, as our diagnostic acumen improves, we will find it possible to diagnose more of these cases early, and more patients will eventually recover. If we begin to recognize the milder cases, it is quite conceivable that some may eventually become amenable to surgical correction.

Summary

In a study of 86 cases of dissecting aneurysm, 67% of the cases were in men. The incidence increased rapidly after the age of 40 years; 60% occurred in the fifth and sixth decades. Pain in the abdomen or chest is usually a prominent symptom, but in half of the patients no history of any type of pain was obtainable. Dyspnea and neurological disturbances are also important diagnostically.

A diastolic aortic bruit, bizarre neurological signs, or hemothorax on the left are valuable diagnostic signs. The protean manifestations of dissecting aneurysm allow one to divide these cases into five syndromes: cardiovascular, pulmonary, abdominal, renal, or neurological. Of the 86 cases in this series, 34, or 40%, were diagnosed during life.

5123 N. Broad St. (41).

1. Shennan, T.: Dissecting Aneurysms, Medical Research Council, Special Report Series 193, London, England, His Majesty's Stationery Office, 1934.

2. Flaxman, N.: Dissecting Aneurysm of the Aorta, Am. Heart J. **24**: 654 (Nov.) 1942.

3. Logue, R. B.: Dissecting Aneurysm of the Aorta, Am. J. M. Sc. **206**: 54 (July) 1943.

4. Baer, S., and Goldburgh, H. L.: Varied Clinical Symptoms Produced by Dissecting Aneurysm, Am. Heart J. **35**: 198 (Feb.) 1948.

5. Weiss, S.; Kinney, T. D., and Maher, M. M.: Dissecting Aneurysm of the Aorta with Experimental Atherosclerosis, Am. J. Med. Sc. **200**: 192 (Aug.) 1940.

6. Gouley, B. A., and Anderson, E.: Chronic Dissecting Aneurysm of the Aorta, Simulating Syphilitic Cardiovascular Disease: Notes on Associated Aortic Murmurs, Ann. Int. Med. **14**: 978 (Dec.) 1940.

7. Levine, E. A.; Stein, M.; Gordon, G., and Mitchell, N.: Chronic Dissecting Aneurysm of the Aorta Resembling Chronic Rheumatic Heart Disease, New England J. Med. **244**: 902 (June 14) 1951.

8. Sando, D. E., and Helm, S.: Acquired Coarctation in the New Channel of a Healed Dissecting Aortic Aneurysm, Ann. Int. Med. **37**: 793 (Oct.) 1952.

9. Reich, N. E.: Dissecting Aneurysms of the Aorta: Clinico-Pathologic Correlation of 79 Cases, Clinics **3**: 346 (Aug.) 1944.

10. Mote, C. D., and Carr, J. L.: Dissecting Aneurysm of the Aorta, Am. Heart J. **24**: 69 (July) 1942.

11. Schnikter, M. A., and Bayer, C. A.: Dissecting Aneurysm of the Aorta in Young Individuals, Particularly in Association with Pregnancy, with Report of Case, Ann. Int. Med. **20**: 486 (March) 1944.

12. Footnotes 1, 5, and 9.

13. (*a*) Footnote 11. (*b*) Niehaus, F. W., and Wright, W. D.: Dissecting Aneurysm of the Aorta: Summary of Clinical Syndrome and Pathology Together with Report of Case Showing Unusual Pathologic Features, J. Lab. & Clin. Med. **26**: 1248 (May) 1941.

14. Moersch, F. P., and Sayre, G. P.: Neurologic Manifestations Associated with Dissecting Aneurysm of Aorta, J. A. M. A. **144**: 1141 (Dec. 2) 1950.

15. Footnotes 13*b* and 14.

16. Wood, F. C.; Pendergrass, E. P., and Ostrum, H. W.: Dissecting Aneurysm of the Aorta, with Special Reference to Its Roentgenographic Features, Am. J. Roentgenol. **28**: 437 (Oct.) 1932.

17. Moritz, A. R.: Medionecrosis Aortae Idiopathica Cystica, Am. J. Path. **8**: 717 (Nov.) 1932.

18. Leary, T., and Weiss, S.: Dissecting Aneurysm of the Aorta in Experimental Atherosclerosis, Arch. Path. **29**: 665 (May) 1940.

19. Gore, I., and Seiwert, V. J.: Dissecting Aneurysm of the Aorta: Pathologic Aspects: Analysis of 85 Fatal Cases, A. M. A. Arch. Path. **53**: 121 (Feb.) 1952.

20. Finkelstein, R., and Jacobi, M.: Dissecting Aneurysm of Aorta with Case Report, Ann. Int. Med. **13**: 1991 (April) 1940.

Serum Hepatitis.—Except for a history of exposure to blood or blood derivatives and an appropriate interval for incubation, there is no practical way to distinguish serum hepatitis from its more frequently encountered twin. This causes many medicolegal squabbles and adds gray hairs to the Workmen's Compensation Board judge. When doubtful cases are heard, a clear history of possible exposure is usually accepted as proof of the diagnosis, although everyone knows this is not always true. Generally speaking, morbidity is greater and sequelae are more frequent in hepatitis B. Treatment is . . . the same. Most of these patients should be observed with greater care and followed over a longer period of time because of the somewhat more serious nature of the disease and also because of the frequent suits for damages or compensation which follow. Intensive efforts to screen donors of blood for carriers of [hepatitis] B virus have met with only fair success. Proof that carriers exist with no history of jaundice whatever has recently been provided and is . . . most discouraging. Efforts to destroy or inactivate [hepatitis] B virus in blood or serum have not been successful. There is evidence that some diminution in virulence occurs when virus-containing plasma is stored at room temperature for long periods, but this is hard to prove conclusively. Fortunately, fibrinogen and gamma globulin have thus far not been incriminated as carriers of [hepatitis] B virus. At this time, the sole method of prophylaxis is the withholding of blood and blood products . . . unless the emergency really justifies the risk.—D. F. Marion, M.D., Diseases of the Liver, *A. M. A. Archives of Surgery*, February, 1956.

SEVERE TOXIC EFFECTS FROM AMINOPHYLLINE AND THEOPHYLLINE SUPPOSITORIES IN CHILDREN

Anthony C. Nolke, M.D., Detroit

• *Ten children with asthma and three with other respiratory disorders were treated with aminophylline in the form of suppositories. The severe intoxication that followed in these cases was characterized by frequent vomiting, unusual thirst, and maniacal agitation. In the severest cases the vomitus became brown and syrup-like and delirium, convulsions, and shock appeared. Four patients died.*

Autopsy findings were inconspicuous except for the finding of pulmonary inflammation in all four cases and of ulcerative esophagitis with perforation in two. The rectal route for administering aminophylline is therefore to be deprecated. A reconsideration of dosages is called for, since these were within accepted limits in 8 of the 13 cases.

Aminophylline (theophylline with ethylenediamine) and theophylline have been widely used in the treatment of asthma. Although the pharmacological activity of aminophylline is entirely attributable to its theophylline content, the increased solubility provided by the combination of ethylenediamine with theophylline has permitted greater versatility in therapy. In the treatment of children, the rectal suppository has gained considerable acceptance because of the ease of its administration. While toxic effects resulting from oral and intravenous therapy are well known,[1] reactions to rectal administration have received scant attention. Thirteen cases of severe toxic reaction to theophylline given by this route are reported herein, with four deaths. Three representative cases are described in detail. Data on the remainder are presented in the table.

Report of Cases

CASE 1.—A 2½-year-old girl was well until four days prior to admission, when she developed a cold; two days later she began to "wheeze like an asthmatic." Since in similar previous episodes her condition had responded to chloramphenicol (Chloromycetin), therapy with this drug was again initiated. The wheezing continued, however, so that at 4:30 p. m. on the afternoon before admission she was given a 3¾ grain (0.25 gm.) aminophylline suppository. The medication was repeated four hours later because no improvement followed the initial dose. Shortly thereafter she vomited, and this continued at half-hour intervals through the night. She was totally unable to retain fluids, although she constantly requested them, and the vomiting was described as projectile. She writhed about as if in abdominal pain. The vomitus became brown and syrup-like in character by morning. She was admitted to another hospital that morning severely dehydrated; she was irrational and stuporous. Hypodermoclysis was done, the vomiting continued, and by afternoon she lapsed into coma. Blood studies at this time revealed blood carbon dioxide content 45 mEq. per liter and blood urea nitrogen level 52 mg. per 100 cc. On admission to Children's Hospital of Michigan her temperature (rectally) was 104.2 F (40.1 C), blood pressure was unobtainable, and respirations were rapid and shallow. Mottling of the skin of the lower abdomen and extremities was noted. The eyes were sunken and fixed in an upward gaze. There was twitching of all extremities and no response to painful stimuli. Dark brown vomitus was present in the mouth and external nares, and similar material was vomited in a large amount during examination. Intravenous therapy was immediately started. Although her temperature rose to 106.2 F (41.3 C) two hours after admission, she shortly came out of shock and ceased twitching, and her temperature fell to 102 F (38.9 C). Six hours after admission the patient voided, responded to voices, and sucked on ice chips. Her blood pressure was then normal, and no further vomiting occurred.

This case emphasizes the unpredictability of response to rectally administered aminophylline when given in generally acceptable dosage. Severe toxic effects followed the use of only two suppositories.

CASE 2.—A 3½-year-old boy with congenital stenosis of the trachea had 10 previous admissions because of respiratory difficulty with infections of the upper respiratory tract. This admission was because of another such episode. Physical examination revealed a robust male child with a temperature (rectally) of 101 F (38.3 C). He was in moderate respiratory distress and had an intermittent brassy, high-pitched cough. Some moist coarse rales were found on auscultation. The child was placed in a steam room and was given penicillin and sulfadiazine. An aminophylline suppository (3¾ grains) was administered every six hours. The temperature fell to 99 F (37.2 C). The child rested comfortably and slept at intervals. After the fourth suppository he refused all food except milk, which, however, he was unable to retain. He urinated frequently in bed. He became extremely restless, requiring restraints after the fifth suppository. After the seventh suppository he vomited "brownish mucus shreds" that shortly became "reddish fluid." He perspired profusely and constantly asked for water to drink. After the ninth suppository he was listless, his temperature rose to 101 F, and he vomited a large amount of "brownish fluid." After the 11th suppository his vomitus was described as "coffee grounds with mucus," and he again became very restless. After the 12th, his vomiting became continuous, his temperature rose to 104 F (40 C), and he began to have convulsions. The temperature rose further to 106 F (41.1 C). The skin became cold and mottled, and his peripheral veins collapsed. Death followed shortly thereafter.

This patient manifested symptoms of increasing severity, ending in death, after the prolonged administration of aminophylline suppositories. Whereas the individual doses do not appear excessive, the effects were apparently cumulative.

CASE 3.—A 7-month-old boy was admitted because of wheezing and labored respirations on the day of admission. He had had episodes of wheezing since the age of 3 months. In the previous month he had been in the emergency room on several occasions and at each time had responded to epinephrine. Aminophylline suppositories (3¾ grains) had been given for use at home, and from these no untoward reactions had been noted. Admission physical examination revealed a well-nourished, well-hydrated boy in a typical acute asthmatic attack. His temperature (rectally) was 100.2 F (37.9 C), respirations were 60 per minute, and the pulse rate was 164. The initial orders included aminophylline suppositories (3¾ grains) on admission and every six hours for four doses. Shortly after admission he rested and slept, although wheezing persisted, while his pulse rate, respiratory rate, and temperature decreased. Six hours after admission a second suppository was inserted, and within two hours the

From Children's Hospital of Michigan and Wayne University College of Medicine.

Read before the Michigan Branch of the American Academy of Pediatrics, Detroit, Sept. 28, 1954.

patient manifested restlessness and agitation, he vomited for the first time, and his temperature rose to 101 F (38.3 C). After the third suppository he became extremely restless, burst out frequently with a high-pitched cry, and perspired very freely. Everything offered orally was taken eagerly but almost immediately vomited, at times projectilely. Near the end of his first 24 hours of hospitalization, and after the fourth suppository, his temperature was 103 F (39.4 C). The boy was continuously gagging, and the vomitus now was described as "brown-liquid" and had a strongly positive test for blood. Twitchings of the upper extremities were noted, and shortly thereafter his temperature reached 105 F (40.5 C). A severe, generalized convulsion occurred, and he vomited a large amount of brown liquid. The pulse became very feeble, the skin became cold and clammy, and all the superficial veins collapsed. Cheyne-Stokes type of respiration was manifest. All medication was discontinued. Plasma, followed by dextrose and saline solution infusions, and paraldehyde were administered; tepid sponge baths were given. Convulsions continued intermittently for the next four hours, despite repeated rectal administration of paraldehyde. Two hours later the temperature was 101 F and twitching occurred only occasionally. There was no further gagging or vomiting, and 24 hours after the last suppository had been given all vital signs had returned to normal.

This is an example of overdosage.

Analysis of Cases

The table presents the pertinent information concerning the patients' illnesses, medicaments administered, and clinical manifestations attributed to theophylline intoxication. The symptoms of intoxication tabulated were selected on the basis of prominence and frequency in the case material. All the patients had asthma except two (table, cases 2 and 5). These were also thought to have bronchial spasm as a component of their basic illnesses. Three patients had a complicating respiratory infection. Eight patients received the medicament at home and were admitted because of the severity of their unexpected and untoward reactions. At the time of admission these patients exhibited very little respiratory difficulty and their asthmatic component was of minimal clinical concern. Five were admitted primarily because of respiratory difficulty, which, however, was considerably relieved shortly after admission. In no case was anoxia thought to be sufficient to cause the clinical picture presented.

Commercially prepared suppositories were administered to all patients; 10 received aminophylline and 3 theophylline. Eight of the patients treated with aminophylline received the 3¾ grain suppository size. One patient (case 6) received 5½ grain (0.35 gm.) suppositories. In only one instance (case 5) was the 3¾ grain aminophylline suppository divided. The three patients given theophylline suppositories received the prepared 2 grain (0.12 gm.) dosage form. Doses were repeated at intervals of four hours or longer in all cases except one (case 9). Two patients in the group (cases 2 and 8) received no supplementary sympathomimetic drugs. One patient (case 1) received one injection of epinephrine 24 hours before the first suppository. Another (case 7) received epinephrine at the time the first suppository was administered. The patient in case 6 received a single injection of epinephrine in oil at home. No additional epinephrine or ephedrine was given to these patients. The remaining eight patients received varying amounts of these drugs, as shown in the table.

Ten of the 13 patients were 3 years of age or younger; the oldest patient was 6 years of age. Initial symptoms were noted after the first suppository in four

Data in Thirteen Cases of Intoxication from

Case No.	Age	Weight, Lb. (Kg.)	Diagnosis	Complicating Disease	Theophylline Medication	Amount per Dose,* Grains per Lb.	No. of Suppositories	Sympathomimetic Drugs
1	2½ yr.	28.5 (12.9)	Asthma	Respiratory infection	Aminophylline, 3¾ grains (0.25 gm.) every 4 hr.	0.105	2	Epinephrine injection (amount unknown) 24 hr. prior to suppositories
2	3½ yr.	30 (13.6)	Congenital stenosis of trachea	Respiratory infection	Aminophylline, 3¾ grains every 6 hr.	0.10	12	None
3	7 mo.	17 (7.7)	Asthma	None	Aminophylline, 3¾ grains every 4 hr.	0.176	5	Epinephrine 1:1,000, 3 minims (0.18 cc.) ephedrine sulphate, ⅜ grain (25 mg.) for 6 doses
4	13 mo.	19 (8.6)	Asthmatic bronchitis	Respiratory infection; tonsillitis	Theophylline, 2 grains (0.12 gm.) every 4 hr.	0.105	2	Ephedrine hydrochloride, ⅜ grain for 2 doses
5	2 yr.	26.5 (12)	Bronchitis	Respiratory infection; tonsillitis	Aminophylline, 2⅛ grains at 6 p.m., 3 a.m., and 9 a.m.	0.085	3	Syrup of ephedrine, 1 dr. (3.7 cc.) for 2 doses before admission
6	6 yr.	48 (21.8)	Asthma	None	Aminophylline, 5½ grains (0.35 gm.) every 4 hr.	0.091	6	Ephedrine in oil 1:1,000 (amount unknown) before admission
7	2 yr.	26 (11.8)	Asthma	None	Aminophylline, 3¾ grains every 4 hr.	0.115	3	Epinephrine injection (amount unknown) at 1st suppository
8	5 mo.	19 (8.6)	Asthma	Respiratory infection	Aminophylline, 3¾ grains every 4 hr.	0.153	3	None
9	2 yr.	30.5 (13.8)	Asthma	None	Theophylline, 2 grains every 3 hr.	0.067	3	Ephedrine hydrochloride, ⅜ grain for 3 doses
10	6 yr.	48 (21.8)	Asthma	None	Aminophylline, 3¾ grains every 4 hr. (aminophylline, 2 grains [0.25 mg.] I.V. for 2 doses on admission) †	0.062	2 1 †	Epinephrine 1:1,000, 3 minims for 2 doses before admission, 5 minims (0.31 cc.) on admission, repeated in 4 hr.; epinephrine in oil, 0.5 cc.
11	3 yr.	27 (12.2)	Asthma	None	Theophylline, 2 grains every 4 hr.	0.074	2	Ephedrine hydrochloride, ⅜ grain for 2 doses
12	9½ mo.	12 (5.4)	Asthma	None	Aminophylline, 3¾ grains every 6 hr.	0.249	4	Epinephrine 1:1,000, 2 minims (0.12 cc.) for 3 doses
13	3 yr.	32 (14.5)	Asthma	None	Aminophylline, 3¾ grains every 6 hr.	0.093	5	Epinephrine 1:1,000, 4 minims (0.25 cc.) for 6 doses

* Expressed as theophylline (aminophylline contains about 78% theophylline).

patients. After the second suppository, 10 of the 13 patients had developed untoward manifestations. Frequent vomiting with dehydration and fever was conspicuous in all patients. The vomitus eventually became quite distinctive and was variously described as "brown syrup-like," "thick cocoa," or "red brown mucus." It was characteristically dark brown, thick, viscid material that gave a strongly positive test for blood. Restlessness, progressing to a state of unusual agitation, was noted in 12 patients in the group. Seven developed a temperature above 105 F (40.5 C), six convulsed, and four died.

Treatment in all instances was symptomatic: control of convulsions, reduction of extreme temperatures, transfusions for shock, intravenous administration of fluids, and finally oral administration of fluids for rehydration.

Aminophylline and Theophylline Suppositories

Onset of Symptoms	Restlessness	Agitated Behavior	Frequent Vomiting	Temperature Elevated	Delirium	Brown Syrup Vomitus (Blood)	Dehydration	Coma	Convulsion	Hyperthermia (105± [40.5 C] or Above)	Recovery Time from Last Suppository, Hr.	Death
After 2nd suppository	+	+	+	+	+	+	+	+	+	106.2 (41.3)	36	..
After 4th suppository	+	+	+	+	+	+	+	+	..	107.2 (41.8)	..	+
After 2nd suppository	+	+	+	+	+	+	+	+	+	105 (40.5)	48	..
4 hr. after 1st suppository	+	+	+	+	+	+	+	..	+	105.4 (40.8)	19	..
2 hr. after 1st suppository	+	+	+	+	+	+	+	+	..	.....	13	..
After 2nd suppository	+	+	+	+	+	+	+	+	+	108 (42.2)	..	+
After 2nd suppository	+	+	+	+	+	+	+	..	..	.....	26	..
After 3rd suppository	?	?	+	+	?	+	+	+	+	105 (40.5)	52	..
After 1st suppository	+	+	+	+	+	+	+	..	..	.....	16	..
After 2nd suppository	+	+	+	+	+	+	+	+	..	105.6 (40.9)	..	+
After 1st suppository	+	+	+	+	+	+	+	..	..	.....	22	..
After 3rd suppository	+	+	+	+	..	+	+	+	+	.....	..	+
After 2nd suppository	+	+	+	+	+	..	+	..	..	.....	16	..

† The 3rd suppository administered to this child was erroneously given in the 7.5 grain size.

Recovery took place in 13 to 52 hours from the last suppository. Only one patient showed sequelae (case 3); he was mentally retarded after the reaction.

Those patients who died (cases 2, 6, 10, and 12) maintained excessive temperatures or had constant twitchings or convulsions despite all therapeutic measures. Death occurred within 20 hours of the last suppository in these cases. Autopsies were performed in all the fatal cases. Aside from esophageal ulceration with perforation in two cases, and pulmonary inflammatory changes in all, the postmortem findings were inconspicuous. Despite the severe symptoms referable to the nervous system, only slight edema and minimal vascular engorgement were found on examination of the brain in three cases. In only one case (case 10) were these findings prominent. In case 2 there was ulcerative esophagitis with perforation into the mediastinum. In case 6 ulcerations in the lower third of the esophagus were found, with erosion into both pleural cavities. Only slight edema of the muscular layer was noted in the sections taken from the lower portion of the esophagus in the other two cases. Petechiae were seen in the gastric mucosa in cases 6, 10, and 12. In all cases there was central lobular congestion of the liver. This was severe in one case (case 10), in which there was in addition central necrosis. In case 2 there was tracheal stenosis, tracheitis, focal atelectasis, and early bronchopneumonia. In cases 6 and 12 there was bronchiolitis and bronchopneumonia, whereas in case 10 there was tracheitis and bronchopneumonia.

Comment

The clinical picture presented by these patients follows a characteristic sequential pattern. Anorexia, nausea, occasional vomiting, wakefulness, restlessness, and irritability are consistent early findings. Although such symptoms may well be attributed to the disease process for which theophylline was administered, their progression into frequent vomiting and agitated, even maniacal, behavior seems to justify their consideration as the onset of an untoward therapeutic reaction. With increasing vomiting the patients develop an unusual thirst. The liquids offered, however, cannot be retained. Agitated maniacal behavior and frequent vomiting accompanied by extreme thirst clearly distinguish this group of patients. Continued emesis results in the development of a dark syrup-like vomitus that gives a positive reaction for blood. This brown viscous vomitus, together with the appearance of delirium, convulsions, hyperthermia, and vasomotor collapse, represents this syndrome in fullest severity. All patients in this series manifested symptoms

of this degree. The order of events suggests grouping into the following stages: stage 1 (early symptoms, not distinguishing)—anorexia, nausea, occasional vomiting, wakefulness, restlessness, and irritability; stage 2 (distinguishing symptoms)—frequent vomiting, agitated, maniacal behavior, extreme thirst, slight dehydration, and slight temperature elevation; and stage 3 (severe symptoms)—brown syrup-like vomitus, delirium, twitchings, convulsions, coma, dehydration, hyperthermia, profuse diaphoresis, and vasomotor collapse.

Although extensive studies on the toxicity of theophylline are not available, excessive doses are said to produce nausea, vomiting, gastric hemorrhage, headache, anxiety, nervousness, delirium, tremors, epileptiform spasms, and convulsions.[2] Intravenous administration of theophylline in the form of aminophylline has resulted in nausea and vomiting,[3] and twitchings, convulsions, and coma have been reported.[1c] Convulsions have been produced in animals after either oral [4] or intravenous [5] administration. These observations compare closely with the reactions described in the case material. Gardner and colleagues [6] reported a strikingly similar symptom complex in a 2-year-old child after the accidental ingestion of a proprietary preparation containing theophylline, ephedrine, and phenobarbital. Their patient became restless, thrashed about constantly, developed muscular twitchings, vomited dark brown material containing blood, had convulsions, and died. Because the symptoms of ephedrine overdosage resemble those of theophylline intoxication, these authors studied the effects of administering these drugs in combination to mice. They observed a marked synergistic effect when mixtures containing relatively high proportions of aminophylline were given. This work is particularly significant in view of the common practice of treating asthmatic patients with sympathomimetic drugs as well as theophylline. Since 11 of the 13 patients reported on herein received a sympathomimetic agent in addition to theophylline, the group was examined for evidence of potentiation. However, neither the two patients who received no additional therapy nor the two who received only one injection of epinephrine in aqueous solution could be distinguished from the other cases. Although such a synergistic effect may well have existed in these patients, it may have been obscured by differences in individual susceptibility, doses administered, and variations in rectal absorption.

Recommendations for the rectal administration of aminophylline are vague.[7] Individual doses suggested range from 100 to 250 mg., age and weight not specified, to 250 to 500 mg. for "older children." Schedules for multiple administration are offered by De Sanctis and Varga [7b] and Dees.[7c] The former suggest 0.125 gm. rectally every four to six hours for "infants" and 0.25 gm. every four to six hours for "older children." Dees mentions that her dose for "older children," 250-500 mg., may be combined with chloral hydrate and given two to three times daily.

Only the criteria of De Sanctis and Varga could be applied to the case material. Eight patients in the group did not receive therapy in excess of their recommendations. The occurrence of such reactions with acceptable doses prompts a reconsideration of the standards of acceptability. This appears particularly applicable to the younger age group, since 10 of the 13 patients were 3 years of age or less. In this regard it is noteworthy that all 13 patients received theophylline in excess of 1/20 grain per pound (3 mg. per pound) per dose. Unfortunately, the commercial preparations generally available contain no less than 2 grains of theophylline per suppository.

Despite the convenience of therapy by rectal suppository, it is the poorest route for administration of theophylline. The studies of Waxler and Schack [8] in adults have shown extremely poor predictability of rectal absorption. Many subjects failed to show an appreciable theophylline blood level after the administration of a 0.5 gm. aminophylline suppository even as late as five or six hours after insertion. Others had high levels as early as four hours. Some subjects had high levels as late as eight and nine hours after insertion. Such variability would seem to preclude the establishment of any fixed therapeutic regimen.

The treatment of intoxication is symptomatic, and it is dependent on the discontinuance of theophylline therapy. Efforts are directed toward the treatment of shock, controlling convulsions and hyperthermia, rehydrating the patient, and restoring a more normal acid-base equilibrium.

Summary

Thirteen patients had severe symptoms of theophylline intoxication after the administration of rectal suppositories. The clinical picture was characteristic; frequent vomiting, agitated, maniacal behavior, and unusual thirst are distinguishing features. The appearance of brown, syrup-like vomitus, delirium, convulsions, and shock are manifestations of intoxication in its severest form. Four patients died. The rectal suppository is a poor means of theophylline or aminophylline administration. The unpredictability of absorption makes a fixed therapeutic regimen dangerous.

Addendum

Since this paper was prepared, Rounds [9] has reported four cases of aminophylline intoxication after administration of suppositories. Love and Corrado [10] also have reported four cases after use of aminophylline suppositories.

5224 St. Antoine St. (2).

1. (*a*) Sollman, T.: Manual of Pharmacology and Its Applications to Therapeutics and Toxicology, ed. 7, Philadelphia, W. B. Saunders Company, 1948. (*b*) Thienes, C. H., and Haley, T. J.: Clinical Toxicology, ed. 2, Philadelphia, Lea & Febiger, 1938. (*c*) Herrmann, G., and Aynesworth, M. B.: Successful Treatment of Persistent Extreme Dyspnea: "Status Asthmaticus": Use of Theophylline Ethylene Diamine (Aminophylline, U. S. P.) Intravenously, J. Lab. & Clin. Med. **23**: 135, 1937. (*d*) Wechsler, R. L.; Kleiss, L. M., and Kety, S. S.: Effects of Intravenously Administered Aminophylline on Cerebral Circulation and Metabolism in Man, J. Clin. Invest. **29**: 28, 1950. (*e*) Gold, H.; Kwit, N. T., and Otto, H.: Xanthines (Theobromine and Aminophylline) in Treatment of Cardiac Pain, J. A. M. A. **108**: 2173 (June 26) 1937. (*f*) Justice, T. T., Jr.; Allen, G. W., and Cronheim, G. E.: Studies with 2 New Theophylline Preparations, Am. J. M. Sc. **224**: 647, 1952.

2. Footnote 1*a* and *b*.

3. Footnote 1*c*, *d*, *e*, and *f*.

4. Thompson, C. R., and Warren, M. R.: Acute and Chr nic To: 'city Studies on Theophylline Aminoisobutanol and Theophylline Ethylenediamine, J. Lab. & Clin. Med. **31**: 1337, 1946.

5. Footnote 4. Gold, H.; Travell, J., and Modell, W.: Effect of Theophylline with Ethylenediamine (Aminophylline) on Course of Cardiac Infarction Following Experimental Coronary Occlusion, Am. Heart J. **14**: 284, 1937. Luduena, F. P.: Bronchial Antispasmodic Actions of Theophylline Derivatives, Including Effects of Continued Administration,

J. Pharmacol. & Exper. Therap. 75: 316, 1942. Johns, R. J.; Bales, P. D., and Himwich, H. E.: Effects of DFP on Convulsant Dose Theophylline, Theophylline-Ethylenediamine and 8-Chlorotheophylline, ibid. 101: 237, 1951.

6. Gardner, R. A.; Hansen, A. E.; Ewing, P. L., and Emerson, G. A.: Unexpected Fatality in Child from Accidental Consumption of Antiasthmatic Preparation Containing Ephedrine, Theophylline and Phenobarbital, Texas J. Med. 46: 516, 1950.

7. (*a*) Beckman, H. Pharmacology in Clinical Practice, Philadelphia, W. B. Saunders Company, 1952. (*b*) De Sanctis, A. G., and Varga, C.: Handbook of Pediatric Medical Emergencies, St. Louis, C. V. Mosby Company, 1951. (*c*) Dees, S. C.: Some Practical Aspects of Allergy, J. Pediat. 37: 685, 1950. (*d*) Ratner, B.: Allergy in Relation to Pediatrics: Panel Discussion by T. N. Harris and Others, official publication of the American College of Allergists, St. Paul, Bruce Publishing Company, 1951.

8. Waxler, S. H., and Schack, J. A.: Administration of Aminophylline (Theophylline Ethylenediamine) J. A. M. A. 143: 736 (June 24) 1950.

9. Rounds, V. J.: Aminophylline Poisoning, Pediatrics 14: 528, 1954.

10. Love, F. M., and Corrado, A. G.: Aminophylline Overdosage in Children: Report of 4 Cases with Toxic Symptoms, A. M. A. Am. J. Dis. Child. 89: 468 (April) 1955.

MEDICAL EDUCATION BASED ON INTERDEPARTMENTAL COOPERATION

John L. Caughey Jr., M.D., Cleveland

• *Interdepartmental teaching is one possible solution to the problems that arise from the increasing specialization within the faculties of medical schools. Unless these problems are solved, medical education will become progressively more fragmented and disjointed.*

The plan involves the creation of multidiscipline laboratories, in which a student has individual working space that is available to him 24 hours a day and seven days a week. The plan includes free time, supervised research projects, prolonged personal contacts between the student and individual patients, an intramural system of clinical preceptorship, and a redistribution of the traditional content of the medical curriculum into subject areas selected by the faculty.

The initiation of this plan has required much time and effort, and its efficient administration is of the greatest importance. Once it is in operation, however, it requires no more instructor time than traditional department courses, and it helps the student to think like a physician from the start of his medical education.

Western Reserve University School of Medicine, like many other medical schools, found it desirable to reexamine its teaching program in the period of adjustment that followed termination of the accelerated schedules of World War II. A variety of fortunate circumstances made it possible for our faculty to consider its educational objectives broadly and to develop means of working toward them.

It is not appropriate in this report to discuss in detail the changes that were initiated with the class that entered Western Reserve in September, 1952, and will graduate this June. It must suffice to say that we have tried to recognize that our medical students are carefully selected college graduates. We have made use of the experience of others in developing a comprehensive program determined by our own objectives and resources and have employed many educational devices, most of which have resulted from study of similar efforts in other schools.

Among other things, our faculty has emphasized free time, supervised research projects, prolonged personal contacts between students and individual patients, and an intramural system of clinical preceptorship that puts small groups of students in close contact with clinical instructors and patients in all four years of medical school. In addition, our method of evaluation of the student has been revised so that emphasis is now placed on his over-all response to his educational opportunity rather than on his grades in written examinations.

Although there is much that could be written about each of these features, my assignment in this report is to discuss briefly our experience with interdepartmental cooperation in medical education. I shall outline what we are doing now, how it was planned, how it is being administered, and how we presently interpret its value. In making this report I speak only as one member of the faculty of the school. A very large number of people have been involved in this project over a 10-year period. The effort expended has been prodigious. It has been guided from the beginning by Dean Wearn, and, since 1950, by Dr. T. Hale Ham. It has depended heavily on financial support from the Commonwealth Fund.

The Present Interdepartmental Teaching Program

The traditional content of the medical curriculum, previously taught in separate departmental courses, has been redistributed into subject areas selected by the faculty. In each subject area an interdepartmental committee, known as the subject committee, is in charge of planning what should be taught and of presenting the material to the students. The subject committee has representation from each department, preclinical and clinical, that has an important contribution to make to the teaching of the subject. The basic pattern of the four-year curriculum is shown in the table, which lists subject committees and clerkships.

The student laboratory work during phases 1 and 2 is done in multidiscipline laboratories, which are so equipped that the student can do practically all of the assigned experiments in the one location. Since our schedule calls for whole class laboratory work through the first semester of the junior year, we have three laboratories of this type. In each, the student is assigned a work space of his own, which is available to him 24 hours a day, seven days a week, and is not used by anyone else. The only other laboratory used regularly for medical students is the anatomic dissection room. This means we now use four student laboratories, whereas under our previous departmental program we had seven.

Associate Dean, Western Reserve University, School of Medicine.

Read before the Annual Congress on Medical Education and Licensure, Chicago, Feb. 13, 1956.

Planning an Interdepartmental Program

Any program that involves close cooperation of many human beings is bound to generate friction because of the numerous interpersonal reactions that must occur. Medical school teachers have strong feelings, many of which are deeply rooted in fixed university traditions. Many faculty members are vigorous thinkers and accustomed to exercise independent judgment and translate this into direct action. The possibilities for producing more heat than light by reactions in this setting are enormous. Our experience with interdepartmental planning at Western Reserve has convinced us that no faculty should enter into this kind of undertaking lightly. Among the ingredients that are necessary for success are those given below.

Arrangement of Subject Matter in Interdepartmental Teaching Program

Phase 1 (2 semesters): Normal Structure and Function
- Cellular biology
- Tissue biology and the neuromuscular system
- Cardiovascular and respiratory system
- Metabolism (gastrointestinal tract, liver, kidneys)
- Endocrine and reproductive systems
- Clinical science

Phase 2 (3 semesters): Disorders of Structure and Function
- Introduction to disease
- Chemical agents
- Infectious diseases
- Cardiovascular system
- Respiratory system
- Hematopoietic system
- Gastrointestinal system
- Genitourinary system
- Skin
- Nervous system
- The special sense organs
- Locomotor system
- Metabolism and the endocrine system
- Organs of reproduction
- Clinical science

Phase 3 (3 semesters): The Care of the Patient

Basic clerkship	4 mo.
Obstetrics and gynecology	2 mo.
Group clinic	2 mo.
Electives	6 mo.
Vacation	2 mo.
Continuity program	½ day/wk.
Basic science	½ day/wk.

Conviction.—A basic necessity is the conviction that, no matter how good the school's program may seem today, the faculty has the obligation to study medical education and to adjust its methods to predictable changes in medical knowledge and in community needs for health services. This conviction must be very strong to overcome the pressure from faculty obligations in research, graduate training, and care of patients. At Western Reserve, more than 125 members of the faculty were significant participants in planning of the program and devoted many hours to this work in addition to their regular duties.

Leadership.—A second necessity is leadership that is capable of stimulating faculty interest in medical education and involving large numbers of teachers in study of educational problems. The leaders must be able to guide the focus and pace of faculty groups without coercing them. One of the most severe tests of leadership is in procuring faculty attention to the examination and definition of broad educational objectives, before debate begins on class schedules and teaching hours. Above all, the leaders must believe firmly in the democratic process, encourage free debate, and assure proper consideration of all proposals, even those contrary to their own ideas.

Time.—Time must be devoted in large amounts by many people during an initial period, if interdepartmental planning is to lead successfully to cooperative action. It is only through close association over a considerable period that able people with strong, but different, feelings can get to understand each other and appreciate the areas of their agreement, and the honest reasons for the divergences that remain. The time investment must be particularly large for the project leaders, who must sit with many different groups as each one debates its way along in the development of the program.

Spirit of Investigation.—A spirit of investigation must pervade the project. The planning must be undertaken with the knowledge that, although accumulated experience will guide action, not all differences of opinion can be resolved by debate and that no one can predict all of the results that may flow from a particular change in educational program. The members of the faculty must have confidence in their ability to identify promising areas for educational experimentation, to develop suitable test methods, and to be guided by the results in a progressive improvement of their approach to the problem.

Administration of Interdepartmental Teaching

The efficient administration of interdepartmental teaching is of the greatest importance. The involvement of many different people located in various parts of the school and hospitals puts a premium on good communications. It is very easy for operational breakdowns to occur and to jeopardize the success of a promising experiment. A new type of administrative mechanism is essential, since the conduct of the teaching is no longer the responsibility of the individual departments in their own courses and laboratories. An associate dean for medical education, Dr. John W. Patterson, has responsibility for the operation of the Western Reserve teaching program and is assisted in each phase by a coordinator and the chairmen of the subject committees. The associate dean has a secretarial staff for production of syllabus materials, laboratory outlines, and examinations and supervises an experienced laboratory manager, who is in charge of the student laboratories and supply rooms.

Value of Interdepartmental Teaching

It is not my intention to attempt a definitive appraisal of our interdepartmental teaching. Our experience with this technique is still too limited to justify that. However, we are now doing phase 1 for the fourth time and know that that type of interdepartmental teaching is working smoothly and, presently, puts no more demand on our teachers than did the previous departmental courses. Although we do not wish to make a firm evaluation now, the great majority of my colleagues at Western Reserve would agree with the following observations. First, the mass of important medical information has expanded

beyond the ability of any faculty to cram it all into a four-year curriculum. There must be some mechanism to decide what will be selected for presentation to medical students. The interdepartmental teaching plan permits this selection to be guided by the faculty as a whole rather than by each department separately. In our practice, the selection is done largely on a departmental basis, but within each subject committee each departmental representative must be prepared to defend his department's suggestions against criticisms by well-informed colleagues from other disciplines.

Second, interdepartmental teaching helps the student "think like a physician" from the start of his medical education, when he is developing the scientific foundation for medical practice. We believe it will diminish the tendency some students have to think of separate courses in the preclinical sciences as hurdles they must get over, and leave behind them, on their way to the practice of medicine. Third, since each department is represented on several subject committees, each has an opportunity to present its point of view and subject matter at various times and at appropriate stages of the students' development. For example, instruction in gross anatomy does not begin until about six weeks after the student enters school, but it recurs throughout the first, second, and first half of the third years. The students complete neuroanatomy in the first half of the junior year, when they are better prepared than first-year students to appreciate this complex subject.

Fourth, interdepartmental teaching reduces the amount of undesired or unwitting duplication of coverage that may occur when separate departments give their own courses without knowing what other departments are teaching. Fifth, the assignment of the student for a whole year to a place of his own in the multidiscipline laboratory, and the availability of this work space to him at all times, gives him a home base and helps him accept his status as a graduate student. Sixth, unified administration of all student laboratories by a competent manager can reduce burdens of individual departments and produce considerable improvement in economy and efficiency.

Seventh, interdepartmental teaching is a valuable project for the faculty. It brings together people who might not otherwise have contact and fosters cooperative efforts in other areas than teaching of medical students. It also encourages the active and responsible participation of younger men in the faculty, since many of them serve as departmental representatives on subject committees and support their department's point of view without regard to their own academic rank.

Finally, interdepartmental teaching by subject committees removes the educational program of the medical student from the rigidity normally associated with university departmentalization. This means that the curriculum becomes more malleable and can be modified in response to needs recognized by the faculty as a whole. It is reasonable to assume that in time subject committees will become stable teaching units and will develop a "vested interest" in the hours to which they have become accustomed. However, since subject committees function, with appointed members, solely for the purposes of the medical-student curriculum, they can never become solidified in the same way that departments have, with their varied and important functions in administration, research, graduate education, and patient care. The departments still perform these functions independently, even though they do cooperate in the teaching of medical students.

Conclusions

Interdepartmental teaching is complex, requires elaborate planning, and should not be undertaken lightly. The development of an interdepartmental program is a project that appears to focus the attention of the faculty and students on educational problems and helps to create a favorable learning situation for the students. After the program is in operation, it seems to require no more instructor time than traditional department courses and is flexible because of its separation from the traditional rigidity of university departmentalization.

There is no entirely satisfactory solution to the problem of providing for medical students a basic general education in medicine in a setting that requires a great deal of specialization in research, graduate training, and care of patients. Interdepartmental teaching of the medical students is one way of dealing with this dilemma. Further experimentation with this, and with other methods, is urgently needed, because, as knowledge increases, the faculties of our medical schools will become increasingly specialized. Unless new methods are developed, the education of medical students will be progressively more fragmented and disjointed and will become an unsatisfactory experience for the student, just as medical care, when provided by an aggregation of technically competent specialists without the benefit of a personal physician who can interpret the whole situation and program, may be frustrating and meaningless for the patient.

Reserpine and Hydralazine in Combination.—Reserpine will produce a significant blood pressure fall in approximately 60% of individuals with sustained and prominent hypertensive vascular disease. When it is used with hydralazine in subjects comparable to those given the single agent, more profound and more frequent hypotensive responses have been achieved. . . . It has been stated that reserpine is the drug of choice for patients whose blood pressure is labile and whose degree of blood pressure elevation is slight to moderate. Our experience, however, indicates that this agent may also be of value even if the hypertension is of considerable degree and has been sustained for as long as five years or more without known remission. In some instances a hypotensive response to Rauwolfia derivatives may be delayed until treatment has been prolonged for several months. For that reason, if an extension of the present program had been possible, it is very likely that the percentage of patients with blood pressure reductions on either therapeutic regimen would have been somewhat greater. . . . Bradycardia, frequently reported as a feature of therapy with Rauwolfia and its derivatives, was not present to a significant degree in our subjects. As with the findings of other workers, however, the improvement in blood pressure could not be associated with definite improvement of the vascular state in the fundi. This may result, partly at least, from the fact that the degree of fundal vascular change in all but one of the patients was relatively mild, that is, not greater than grade II in severity.—R. E. Lee and others, Reserpine-Hydralazine Combination Therapy of Hypertensive Disease, with Hydralazine in Doses Generally Below the "Toxic Range," *Annals of Internal Medicine*, March, 1956.

THE UNIVERSITY IN MEDICINE

CONCEPT OF THE NEW PROGRAM AT THE UNIVERSITY OF FLORIDA

George T. Harrell Jr., M.D., Gainesville, Fla.

• A program of medical education is being developed to prepare the student for medicine as it will be practiced 20 years from now. The university must educate him to be a citizen, and the professors within the medical school must have a sufficiently broad background to contribute to this aspect of his development. He must also be prepared to accept responsibility for definitive medical care of the families in his charge and to ease not only the medical but also the sociologic, psychological, and economic impact of disease upon the family. A student-centered program for this purpose, with the physical plant designed to implement it, is here described.

The University of Florida is exploring the role of the university in medicine. We have deliberately chosen this approach rather than a more traditional one of the role of the medical school in a university. We are attacking the problem from two points of view: (1) the education of a physician in the university setting and (2) the care of patients in the local community.

Basic Philosophy

We first outlined a basic philosophy embracing these points of view. We then designed the physical plant, began the selection of our faculty, and started the development of a curriculum to implement this philosophy.

Role of the University.—The job of the university is primarily one of education. Historically, the university has always been the place where scholars contribute to the store of knowledge, develop ideas, and elaborate new theories. In the United States we have come to expect, particularly of our state universities supported with tax funds, service to the people in addition. Since we are charged primarily with the education of students from the state of Florida, we have tried to plan our program so that we will always be aware of the special problems that are present in our state to a greater extent than in others. Examples are the extremely rapid expansion of population and the increasing number of older people who are moving into the state. Since we are in a period of rapidly evolving social change, we should plan our program so that the end-product of our educational system can meet the needs in the state as they likely will exist 20 years from now. Any program designed for the conditions as they exist at present will be obsolescent by the time it is in operation. Since by far the greater proportion of students who seek training in the health fields expect ultimately to practice their profession, the training program should be pointed toward the education of these practitioners.

A great number of studies have been done as background information on the age range, distribution of the population of the state, and the size of communities. The university has encouraged our professor of sociology to conduct this study and also to gather data on the doctors, nurses, and hospitals in the state. The results of these studies have been published and have been used in our basic planning.[1] Additional work is in progress, and we hope that new facets will be continuously under study to project trends and to adjust our thinking as we go along.

Role of the Physician.—The practice of medicine is essentially a social institution that has evolved gradually over many centuries. From the days of the witch doctor and the priest–medicine man, the doctor-patient relationship has been a highly confidential, interpersonal one. Any social institution that has been satisfactory to the people and that has persisted essentially unchanged over many centuries is likely to continue, so that the program should be planned around an interpersonal relationship. A sense of deep personal responsibility for the welfare of another individual should be developed in the professional man. Since the professional man deals with people in his day-to-day activities, it is advantageous to emphasize in his preprofessional background the understanding of people, why they behave as they do and why they do what they do.

Role of the Family.—Most disease occurs in the home and can be successfully diagnosed and treated in the home with what the physician can carry into it in his head and in his hands. The unit in our society for many centuries has been the family. We believe our job is the training of the family physician for practice in our state as it will exist one to two decades hence. When disease affects an individual in a family, there are organic medical problems of cross infection that are familiar to us all. But disease as the physician sees it is rapidly changing in character under the influence of modern medical knowledge and practice. When disease strikes an individual in a family, particularly if the individual is the breadwinner, the impact on the family is felt not only medically but sociologically, psychologically, and economically by the patient's family. It has been a tradition, especially in the South, that the physician accept responsibility for definitive medical care for the families in his charge. Society has accepted the right of the physician to call in consultants who may apply specialized knowledge and skills and help in the care of his patients. The responsibility, however, still is placed by society on the physician in charge. We feel that the university has a responsibility to examine the role of the consultant and to determine which other people in the university might serve as consultants in problems of patient care.

Dean, University of Florida College of Medicine.

Read before the Annual Congress on Medical Education and Licensure, Chicago, Feb. 12, 1956.

Support for the development and exploration of these ideas has been provided by the Commonwealth Fund, New York City.

Long-Term Trends.—Florida has the most rapidly increasing population of any state east of the Mississippi. This rapid rise in population has been a long-term trend that has accelerated in the postwar period. To cope with the problems of increasing numbers of people, more medical care must be available in future years. For over six years now there has been a steadily declining number of applicants to medical schools all over the United States. Even more alarming is the decline in the quality of applicants. If this trend continues, we face the difficult task of giving more medical care with relatively fewer physicians. The rapidly expanding complexity of the scientific aspects of medicine through technological advances and increases in knowledge makes it unwise to consider lowering the standards for admission to medical school. We must, then, find ways by which we can relieve the physician of parts of his job that can be equally well done by other trained people. Society has already accepted this approach, and the physician is no longer expected to do his own blood cell counts or to take and develop his own x-ray films. The university has a responsibility to determine if new types of personnel should be developed to serve as members of the health team to aid the physician in patient care.

Education in the University

Education as a Citizen.—In any profession, the man must first be educated as a citizen. In colonial America we looked to our educated professional men—the preacher, lawyer, teacher, and doctor—for intellectual leadership in the community. It is even more important today that the professional man not shirk this responsibility. All universities recognize this responsibility for the general education of students. A traditional duty of the university has been the education of the mind to think and to reason, as opposed to the training in and the development of technical skills as requirements to fill a specific position. In the health professions, the educated citizen must also be trained in methods of patient care; this is the specific responsibility of the medical school as a part of the university. We feel that in the field of patient care the horizon should be broadened as far as possible. For this reason we have chosen at the University of Florida to call our unit a health center rather than a medical center.

Education for the Health Fields.—At the University of Florida the educational program starts with comprehensive courses in a general educational program known as university college. The student coming to the university at the end of high school continues this general program for two years to prepare him to assume his place in society as a citizen and to begin the training of his mind. He must then elect some terminating program or elect preprofessional training that will permit him to continue in a graduate or professional school after he receives his baccalaureate degree. The role and point of view of the various professions should be made clear to him before he makes this election. Members of the medical faculty at the University of Florida are now teaching in selected preprofessional courses in the university college and in the college of arts and sciences. Members of the medical faculty have been selected so that they might serve as university professors in a broad sense rather than solely as teachers in the medical school. These faculty members are the end-product of an educational system, and students should have the benefit of counseling and guidance from them.

It is important that any student at whatever level of training who might ultimately be brought to bear on a program of patient care be basically oriented from the same point of view. This must be accomplished early in his training in the university. We have selected the theme of human biology as a thread that might run continuously through the university, from the general educational program through the specialized residency training in the hospital (fig. 1). Members of the medical faculty are giving selected teaching exercises that emphasize basic concepts, such as biological variability and its corollary, adaptability, that are common to all living things. Illustrations may be selected from the field of medicine to emphasize that basic biological principles apply in the human species exactly as they do in simple forms of life.

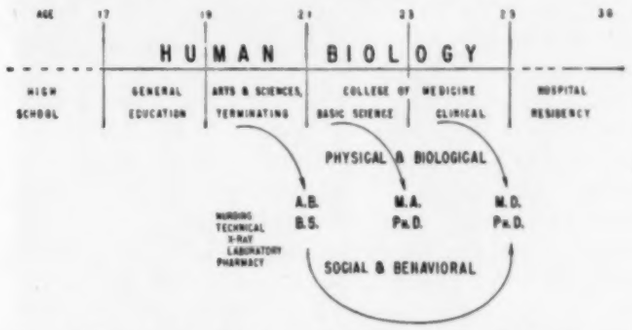


Fig. 1.—Theme of human biology that runs through university program, from general educational program through the specialized residency training in hospital.

In modern university terminology the situation of the individual student is comparable to that of the quarterback in the split-T option play. The student can go in a general direction for two years in his educational program, but then he must make an election. Depending upon his intellectual capacity, drive, and family situation, he may elect a terminating program, such as nursing, pharmacy, or one of the technologies so that he will graduate with an A.B. or B.S. degree. Another student may elect to run longer with the ball and point toward graduate work. At this point, he may elect to go into the health fields, without knowing specifically whether he wants to become predominantly a practitioner, and elect training leading to a medical degree. He should have the opportunity, with guidance and counseling, to delay this election until he has experienced work at post-baccalaureate level in the professional school. After this latter election, he has committed himself permanently to his professional work. With the now well-recognized national shortage of scientific manpower in all fields, it is imperative that students be encouraged to continue in graduate work. Most medical schools have unfilled faculty positions, especially in the basic sciences, and new medical schools are in the process of organization.

An increase in funds available for research in health-related fields cannot intelligently be used for maximum productivity until more medical scientists and teachers are trained.

Education of the Physician.—In professional education at the postbaccalaureate level, emphasis will be on the training of the individual mind. Because of the rapid rate of scientific progress, the student should understand early in his training that when he elects to study medicine he has committed himself to a never-ending process of self-education. The physician approaches his problems intellectually in essentially the same fashion as members of many other professions. An architect, for instance, talks with a family to decide what it considers important, how it wants to lead its life, and what it can afford to do. The architect then designs for the family, with the help of his professional and technical knowledge, a solution that becomes the family's home. The physician does the same thing every day. He collects data that are

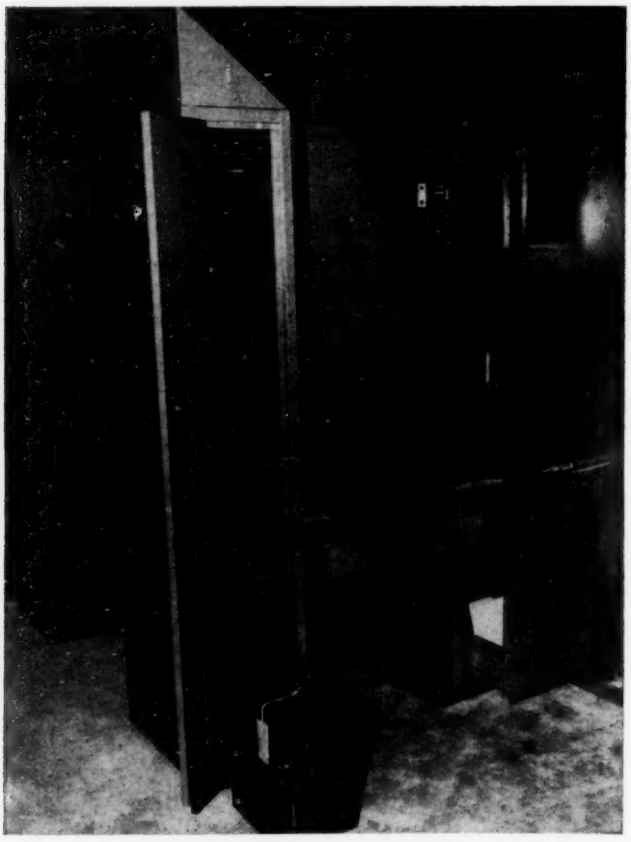


Fig. 2.—Study desk or "thinking office" designed for each student.

heterogeneous and of varying degrees of accuracy. He collects the data under varying circumstances, but essentially in the home, hospital, and office. He must evaluate these data for the technical error in the method of collection, for the inherent error in the procedures, and for the ever-present human error. He must then synthesize the data into a working hypothesis. He then plans a course of action individually designed for the patient and sets up check points to evaluate the effectiveness of his regimen. All of this must be done within the framework of the family and must be both acceptable to them and achievable by them.

To dramatize that the important part of this process is thinking, a unique study desk or "thinking office" has been designed to capture the flavor of the practicing physician's desk and the graduate student's library carrel (fig. 2). Each student will be assigned to his own study cubicle the day he enters the college of medicine at the University of Florida. He will retain his same desk for two years, after which time he will move to a similar unit located in the hospital rather than in the medical school. We hope that the student will develop a sense of continuity by remaining in a familiar surrounding where he learns to work with the intellectual tools he will use the remainder of his professional life. Here he has at hand textbooks, monographs, journals, course outlines, reference cards, patient summaries, data sheets, microscope, and, if he wishes, a microcard reader and lantern slide projector. Here he can study whenever he wishes with his own materials while questions are fresh in his mind. The point we wish to emphasize is that somewhere, sometime each day for the rest of his professional life he must think about what he has done and put it in perspective with what he knows. He will start his day at his thinking office and, for the first two years in medical school, will collect his data in the laboratories of biochemistry, anatomy, physiology, and the other basic sciences. After two years, instead of collecting his data predominantly from test tubes and animals, he will collect them from patients in the clinical areas designed as the educational counterparts of the home, office, and hospital. The physical plant has been designed for this educational program.

Toward the end of his professional training, the student is dealing with individual patients. We intend to explore the possible use of resources from any part of the university that might be applied to our problems of education and patient care. Social and behavioral scientists spend their lives studying people. Usually their graduate students are trained quite apart from medical students. We believe it would be desirable to have some place within the health center where the educational theme of human biology might be approached from the social and behavioral point of view. We have designed our ambulant patient facilities as a "laboratory of applied human biology," where any person in the university who utilizes human material might work side by side with a medical student at a comparable level of educational training.

Patient Care

The ultimate responsibility for patient care rests with the family physician in the local community. Most disease should be cared for in the home with the help of the family. A large portion of the physician's time in practice is taken up with patients who present symptoms for which no organic cause is apparent. We do not feel that the physician has discharged his responsibility when he says, "I can find nothing organically wrong with you." We believe he must be so trained from a broad point of view that he can sense the stresses and strains in the family or community that have led to the symptoms. He must be aware of help he can get in the local community from any member of a potential health team.

Since the ultimate objective is the training for practice of all members of the health team in the local community, it is essential that early in the educational process they be familiar with the same basic concepts and be oriented from the same point of view. Later they should have worked together as a team in the clinical areas of the university. The talents of each person can be better and more effectively used if he understands not only his own role but that of all others aiding in patient care. Each local community has its own personality, and the variety of solutions for organization and support of members of a potential health team is infinite. For example, it makes little difference if the clinical psychologist is supported by the local health department, the community hospital, the school system, or a group practice clinic. It is important that trained people who understand problems from the same point of view and who have been trained to work together are available in the community.

Many ingenious experiments are designed in medical education to illustrate principles for the student. Since a large part of medical care ultimately devolves on the family of the patient, more planning should be done for the instruction of patients and families in how to care for disease in the home. Often the adjustments required in the social and economic status of the family under the impact of disease are more important than the actual technical aspects of medication or physical methods of treatment. The university has an obligation to explore the possible use of people trained in social and behavioral sciences, the humanities, religion, and other fields in a program of patient care. Special facilities to reproduce the setting of the home are being designed on each floor of the teaching hospital and in the clinics for instruction of patients and their families.

Physical Plant

The physical plant has been designed to translate this basic philosophy and educational program into buildings. In both the medical sciences building and the teaching hospital, the objective has been to provide the best educational facilities possible to implement the student-centered concept of the curriculum.

Medical Sciences Building.—The medical sciences building is now nearing completion (fig. 3). It has been designed to further the concept that there is no essential difference between the basic sciences and clinical medicine. In order to facilitate interchange between basic science and clinical departments, those departments that have a common interest in either teaching or research have been placed on the same floor. The basic science and clinical departments share teaching laboratories, cold room, lecture room, and other facilities, which are placed in a cross wing. The thinking offices for the first and second year medical students are located in this cross wing. Classrooms have been sized for student groups of 16 or multiples of this student module. Research laboratories have been designed with an equipment module of 4 ft. 6 in. to permit quick and inexpensive readjustment of research facilities.

In the design of the physical plant, every possible effort has been made to achieve the greatest amount of flexibility, so that the curriculum may be changed from year to year with the least concern for availability of teaching facilities. All units, insofar as possible, have been built for multipurpose use. Basic supporting facilities, such as the library, cage washing, and animal nutrition kitchen have been deliberately overdesigned in capacity for the present building. Facilities that might be expected to grow have been placed at the ends of the building, so that as additional wings are added growth is provided for and the functional arrangement will not be lost. The site has been designed, parking lots laid out, and access roads planned so that the college of pharmacy and two research wings can be added at the basic science end of the present building. A clinical research wing, social and behavioral science unit, and a dental school could be added to the clinical end of the building. The ground floors of these units would be reserved for animal quarters and library stacks, which will need to expand as the physical plant grows.

Fig. 3.—*Top*, front view of medical sciences building; *bottom*, rear view.

Should the additional educational units be built, the library will remain as the educational hub and will be equally distant from dentistry, postgraduate (residency) medicine, pharmacy, and undergraduate medical education. The site was selected to give the feeling of relative separation from the rest of the university by a semicircular grove of trees and yet to be only several hundred yards from the center of the campus. The design will permit a student or laboratory worker anywhere in the building, except in the windowless lecture rooms, to look out and see green grass and trees. A large student lounge has been provided adjacent to the study cubicles so that the "bull session," which is an essential part of any educational process, can be promoted without interruption of serious thinking in the study cubicle area.

Clinical Facilities.—The patient care facilities have been conceived as clinical laboratories. The educational counterparts of the home, the office, and the hospital are found in the ambulatory wing, the clinics, and the hospital respectively.

Ambulant Wing.—The ambulant patient facilities have been conceived as a "laboratory of applied human biology." In the ambulant bed wing, members of the family may stay with the patient as they would in the home. This unit can be used to explore new methods of patient care. Patients with certain diseases, such as a diabetic patient undergoing regulation, are best cared for when the patient is dressed and approximating his normal daily activities. The two largest items in traditional hospital care are bedside food service and bedside nursing. If the patient walks to his meals in the cafeteria, the cost of food service can be greatly reduced. (On our campus we feed students three meals a day for $1.90.) The patient on a special diet should learn to select his meals from a menu when he eats outside of his home. One cafeteria line can be set up with a dietitian at the end, so that the meal can become an educational experience for the patient. Should nursing service be necessary, or an emergency arise, the nursing station is just around the corner on each floor.

Medical care in the ambulant wing would be administratively related to the outpatient clinics. It would be possible for certain patients who are receiving rehabilitation, speech therapy, or vocational counseling to be housed for a limited time in the ambulant facilities. These patients could be studied and receive care not only from medical students but from other students at comparable levels of training from any area of the university.

Hospital.—The first seven floors of the hospital will be connected with the clinical end of the medical sciences building by a connecting wing that contains supporting facilities that are used in common by the hospital, ambulatory wing, and clinics. Teaching and research facilities for the department of medicine in the medical school, for instance, are found on the same floor as the hospital diagnostic laboratories and the beds for the clinical clerkship. The basic science department on this floor is microbiology, a basic science used in both diagnosis and control of therapy. The departments of anatomy, surgical specialities (orthopedics, neurosurgery, and urology), an ambulant surgical facility, and the operating rooms for bed patients are found on another floor. On this floor the diagnostic facility is the x-ray department, where anatomy in the living patient is visualized. In a similar fashion, other floors of the hospital have been matched with departments in the medical school.

The elements of the home in the form of a four-room apartment are being constructed on each floor of the teaching hospital, so that patients and families may be instructed in the proper methods of care at home. The kitchen can be used for actual preparation of meals and dietary instruction of the patient and his family. On the medical floor, this kitchen will be arranged for instruction of cardiac patients and, on the orthopedic floor, for the instruction of severely handicapped patients. The bedroom, furnished with home furniture, and the bath are designed for the instruction of families in the care of patients with recent hemiplegia or colostomy or in the care of a newborn infant, depending on the floor. The bedroom doubles as a facility for the house officer on call to sleep on the ward overnight. It is possible to use this unit as a two-bed metabolic ward on any floor. The counterparts of the living room are for consultations with patients and families. All of these elements of the home are also reproduced in the outpatient clinic.

The facilities for patient education are so placed that the nurse, medical student, or house officer on the floor or the dietitian, physical therapist, clinical psychologist, or marriage counselor from other parts of the plant can meet the patient and family at the center of vertical transportation in the elevator tower. The teaching unit on each floor of the hospital has been designed identically so that the student will not have a mental image of a highly specialized facility that differs on each service. We are attempting to impress on the student that the basic principles in medicine are simple and that the adaptation to the particular disease problem at hand must be done with his own knowledge and ingenuity. We hope that these facilities will emphasize to the student that we are dealing with a variable biological system. No two individuals are the same, and no single individual when studied successively in point of time reacts in exactly the same way. We hope, not only early in the basic orientation of the preprofessional student but again in his professional training, to emphasize that, in order to meet scientific criteria when one studies a variable group, a large number of data must be collected in order to smooth out individual variations. When one practices medicine, however, he attempts to apply data collected on one individual to conclusions drawn from studies of a group. This poses a statistically impossible situation, as far as scientific criteria are concerned. It will not alter the situation in the future, regardless of how accurate our tools for collection of data become, so long as we deal with one patient. The practice of medicine will forever remain an art and can never be a science. For this reason both the preprofessional and the professional training should emphasize more of the art of understanding and handling people.

Summary

The University of Florida is developing a student-centered program that emphasizes the training of the family physician for practice in the local community as a student may expect to find it 10 to 20 years hence. A university-wide theme of human biology is being used, so that all resources of the university might be brought to bear to explore better methods of education of any person who might be used in a program of patient care in the local community, as well as better methods of patient care.

1. Poor, R. S.: Planning Florida's Health Leadership: A Summary, Medical Center Study Series, Gainesville, Fla., University of Florida Press, 1954, vol. 1. MacLachlan, J. M.: Planning Florida's Health Leadership: Florida's Doctors at Mid-Century, Medical Center Study Series, Gainesville, Fla., University of Florida Press, 1954, vol. 2; Planning Florida's Health Leadership: Health and the People in Florida, Medical Center Study Series, Gainesville, Fla., University of Florida Press, 1954, vol. 3; Planning Florida's Health Leadership: Florida's Hospitals and Nurses, Medical Center Study Series, Gainesville, Fla., University of Florida Press, 1954, vol. 4. Planning Florida's Health Leadership: Medical Education in the University, Maloof, L. J., editor, Medical Center Study Series, Gainesville, Fla., University of Florida Press, 1955, vol. 5.

TEACHING THE FAMILY PHYSICIAN'S APPROACH, AS BUILT AROUND GENERAL PRACTITIONERS

Louis F. Rittelmeyer Jr., M.D., Jackson, Miss.

• The need for family physicians and general practitioners is felt especially in rural areas. The medical curriculum of recent years has not fully equipped the young graduate to meet the obligations of a family physician in a small town.

Recognition of this deficiency has led to various plans, one of which is described here. It involves setting up a division of general practice within the department of preventive medicine, a department that by tradition runs diagonally across the highly compartmented medical curriculum. The student is introduced to his first family in his second year. After some experience he selects, before his last year, the family that will be under his care until he graduates. Supervision of patient care in this program is provided by practicing family physicians, and the only full-time member of the staff is the director of the section on general practice.

The working of the program is illustrated by a case history that emphasizes the advantages of total family care, the continuity of doctor-patient relationship, and the attitude of the family doctor toward his patients and his profession.

The general practice program at the University of Mississippi is, as you will see, rather ambitious, but my faith in its possibilities is great. If I were older and wiser, perhaps I would be more restrained in my optimism and more cautious in my predictions. Not only is my own entrance to the educational field recent, but the program of which I shall speak is equally new. Even the school I represent is one of the youngest four-year medical colleges in the nation. It is a challenge and an opportunity. We accept the challenge with confidence and the opportunity with enthusiasm.

Organization

First, a word of explanation regarding our administrative setup. The general practice section is a division of the department of preventive medicine. This follows the pattern set at the University of Tennessee several years ago when it instituted a general practice program, with which it was my pleasure to be associated for nearly two years. There is a basic difference between the function of these departments of preventive medicine and others that are teaching what has been called comprehensive medicine. At some schools, preventive medicine is the hub at which the teaching of many specialists is brought together. At the University of Mississippi, preventive medicine is a "big brother" to us newcomers to medical faculties, the general practitioners. This relationship is proving to be quite satisfactory, and we believe it is entirely appropriate. Both disciplines run diagonally through a highly specialized and compartmented curriculum. That they work hand in hand is highly desirable and mutually beneficial.

Our program differs also from the preceptorship, which 24 medical schools are conducting. In those programs, students are "farmed out" to general practitioners for periods ranging from 2 to 12 weeks. At the University of Mississippi, the general practitioners are brought into the school to conduct a program that has a continuing influence on students throughout most of their last three years in medical school.

Background and Purpose

Inevitably the question arises, what should the general practitioner teach? My favorite comedian, George Gobel, remarked a while ago about how one performer supported the heart fund, another one the cancer drive, another the poliomyelitis foundation, and so on. Then he lamented that he guessed he had gotten into television too late—all the best diseases had been taken!

Let me assure you that we have no desire to compete with the traditional departments for diseases. The ability of specialists to teach the facts and techniques of their respective fields is well known. The high quality of medical practice that exists today is a tribute to their teaching skill. The general practitioner's value to a medical school lies in his unique qualification as family doctor. He is a specialist, if you will, in family medical care. It is our intention, therefore, to supplement—not replace—the other clinical courses, correlating facts taught by the various specialists and integrating this information with a knowledge of family environmental and emotional influences that bear on health. We propose to help students apply their knowledge by observing and caring for people in family units.

It is widely recognized that something has been missing in our medical schools, that what should have been everybody's business has become, in fact, nobody's. The recognition of this deficiency has led to action to overcome it. Many plans have been developed to teach students a more comprehensive family-doctor approach to patients. These have made use of social workers, psychiatrists, internists, and various other specialists. I am sure that such programs give students a more balanced approach to patient care. It seems to me, however—and it appeared reasonable to Dr. Pankratz, dean of the school of medicine, and Dr. Brooks, professor of preventive medicine—that perhaps the best qualified teachers of family medical practice might be family physicians.

What contribution the family physician can make to medical education remains to be seen. He certainly cannot solve all the many vexing problems that confront us. At the University of Mississippi, he is being given an opportunity to demonstrate what he has to offer. Being a

Associate Professor of Preventive Medicine and Director of the Section on General Practice, University of Mississippi School of Medicine.

Read before the Annual Congress on Medical Education and Licensure, Chicago, Feb. 12, 1956.

general practitioner myself, I admit to a slight degree of bias. But it is a conviction founded on experience in a small town. When I started practice, it soon became painfully apparent to me that my education had not fully equipped me to meet my obligations as a family physician. It is my belief that only men with a background in family medical practice, men who are familiar with its problems and opportunities, can fill this deficiency in medical education.

Proposed Program

Our first contact with students is early. In the sophomore year, students are introduced to families in their homes. Each one is assigned a family for the entire year, to learn as much as he can about the environmental, social, economic, and emotional make-up of the family group. He does not function as a physician, and for this reason the project is only an introductory course. A situation is created, however, in which a student meets the members of a family, not as unrelated cases in a hospital ward or clinic, but as a functioning unit in the natural surroundings of the home.

It is our purpose to assist the student early in his training to appreciate the many complex factors, involving agent and host, that produce illness and retard recovery. A panoramic view of medicine is thereby acquired before the more limited orientation to organic disease is taught on the hospital wards in the third year. The project is a part of the course in preventive medicine. Principles of epidemiology and biostatistics are explained, using as examples actual diseases seen in the family.

We believe that, by introducing the student to these families early in the curriculum, we can nurture a healthy and balanced perspective toward patients and disease. By following through with this outlook, after he has learned the basic facts of clinical medicine, the student can then apply the knowledge he has acquired. He is given this opportunity in the family care program.

Toward the end of the junior year, students select the families that will be under their care until they graduate. Each student will be a family doctor to one or more families for one year. He performs routine physical examinations on all members of his family and gives needed immunizations to the children. He evaluates and attempts to correct any environmental conditions that may react unfavorably on the family's health. In the event of illness, the patient calls his student-doctor, who responds by making a house call or by arranging to meet the patient in the outpatient department, a portion of which is reserved for his office.

These students will see diseases in their early stages and learn to make a diagnosis before illness is advanced and complications imminent. They will learn to cope with the many complaints that somehow never get into the textbooks. They will see the success or failure of therapy in both acute and chronic disorders. They will observe pregnant women for several months and learn that every backache is not pyelitis or every dizzy spell toxemia. They will apply sound principles of preventive medicine to keep their patients healthy, as well as to cure their illnesses. In conjunction with both of these programs, conferences are held, at which problems in selected families are discussed with the students and means of solving them proposed. General practitioners and representatives of appropriate specialty departments and health and social agencies attend these conferences.

Supervision of patient care in the family care program is provided by family physicians from Jackson and nearby towns. About two-thirds of our staff members are rural and small-town doctors. I am the only full-time member of the staff; the others are in private practice and serve part time without remuneration. The Mississippi chapter of the American Academy of General Practice has given valuable assistance in securing a competent and enthusiastic faculty. The staff assists the students in diagnosing and treating their patients as completely as possible. Consultation in office, at home, or by telephone is available at all times. When necessary, consultation with specialists is sought in the usual manner. If a patient requires hospitalization, the student follows his progress in the hospital and resumes his care after discharge.

The learning opportunities in such a program are numerous. I should like to elaborate on one of them: the natural history of disease. By knowing a person when he is healthy, caring for him when he becomes ill, and following his progress to recovery, a student is able to see the complete picture of a disease. The basal rales and enlarged liver of congestive heart failure are seen, not as isolated findings in a case of decompensation, but as the progress of a disease that had a cause that might have been prevented, a course that could have been interrupted, and an outcome that can still be made happier. Also apparent are the effects of the disease on the patient and on the other members of his household.

To orient students to the family physician's approach, we emphasize (1) total family medical care, (2) continuity of doctor-patient relationship, and (3) the family doctor's attitude toward patients and the practice of medicine. We feel that no collection of specialists can impart this attitude to students; only physicians who possess it themselves can do so. I would like to tell you about a woman who was a patient on the family care program when I was at the University of Tennessee, in Memphis. It illustrates our three points of emphasis very well.

A widow in her 60's had suffered for about five years from severe asthma. She attended outpatient clinics regularly and was a frequent visitor to the emergency room for epinephrine shots. A student-doctor became her first family doctor. For several weeks he wished he had not; her asthmatic attacks were taxing his ingenuity and interfering with his sleep. He soon established good rapport with the patient and discovered that, as her confidence in him grew, the frequency and severity of her attacks diminished. Within six months, she had only an occasional attack of asthma. The resources of a large medical center had done less for this patient in five years than a senior student did in six months.

The student-doctor noticed her sight was impaired from cataracts and, feeling that this was aggravating her asthmatic condition, he arranged to have them removed. Each time she went to the hospital, however, the asthma returned, and the operation was postponed. After several unsuccessful attempts, the student abandoned the idea. When the student was nearing graduation, he took a new student-doctor to see the woman and her family and introduced him as their new family doctor. The news so upset the patient that she went into a state of status asthmaticus, had to be hospitalized, and almost died of acute

pulmonary edema. The new student-doctor was shaken but not discouraged. He soon developed a good relationship with the patient, and, after a few weeks, the frequency of her asthmatic attacks decreased. He succeeded, moreover, in getting the cataracts removed, by giving sedatives to the patient before taking her to the hospital. After surgery, the patient had only a rare attack of asthma. By the time the second student-doctor graduated, she and her family were in such good health we dropped them from the family care program.

The above story is admittedly unusual, but it is unusual only in its more dramatic details. The important, but frequently overlooked, point is this: medical students need to learn how to care for patients as much as they need to learn how to diagnose and treat diseases. A situation that provides the opportunity and teachers who are qualified to offer guidance are essential for this to be done.

It is too early to say how successful we will be in reaching our stated objectives. Sophomores on the program are showing considerable interest. Our first senior class enters next fall. Judging from my experience in Memphis, I think we will make it. Our state is largely rural. It needs more competent family physicians. We hope to inspire a majority of our graduates to enter general practice in areas that need doctors. Beyond this limited objective, we want to recapture some of the love of the art of medicine that was the trademark of physicians not too long ago. By combining the latest advances in medical science with the highest ideals of sacrifice and service, we hope and expect to graduate men and women better prepared to fulfill their obligations to society.

Before closing, I would like to call to your attention a resolution that was passed unanimously by the House of Delegates of the American Medical Association last Dec. 1 in Boston. A continuing Committee on Medical Practice was created and was "directed to utilize all possible means to stimulate the formation of a department of general practice in each medical school." The resolution stated further, "That the American Medical Association approve of the medical school teaching programs which afford the medical student opportunity for experience in the general practice of medicine." Ninety percent of the members of the House of Delegates are specialists, but they are, first and foremost, physicians who see a need and want it filled.

Conclusions

The type of general practice program instituted at the University of Mississippi School of Medicine may not be applicable in every medical school, but it is our firm conviction that the family doctor is needed, whatever the program, to correlate and interpret for the student the facts of medical science as they apply to patient care. The need, as we see it, is not less attention to teaching the science of disease by highly trained specialists but more attention to teaching the art of patient care by competent, experienced family doctors. Only then can we be sure that our graduates will possess the ability to skillfully apply the hieroglyphics of medical science to the practical problems of the art of healing.

THE RESIDENT CLINICAL CLERKSHIP—AN EXPERIMENT IN MEDICAL EDUCATION

Ralph E. Snyder, M.D., New York

This is a report of the resident clinical clerkship, often called the student-internship, an experimental approach to the teaching of clinical medicine as it is being conducted at New York Medical College. I want to emphasize that this approach is purely an experiment in medical education and that this is a report of a program still developing. The financial support of this program has been provided by New York Medical College. The program has had the fullest cooperation of the City of New York, the department of hospitals, and the commissioners of hospitals, Drs. Edward Bernecker, Marcus Kogel, and Basil MacLean.

Experimentation in education, the search for improved methods and techniques of teaching, is not new. It might be said that medical education has come of age during this century, although certainly education, teaching and learning, in one form or another has been and is part of the tradition of medicine. During the past few decades, formal experimentation in medical education has found increasingly greater interest, not only among those who

Dean, New York Medical College, Flower and Fifth Avenue Hospitals.

Read before the Annual Congress on Medical Education and Licensure, Chicago, Feb. 12, 1956.

• *The resident clinical clerkship or student-internship is a new plan for the education of the fourth-year medical student. It embraces a 12-month schedule divided into three four-month periods. One period is devoted to medicine and medical specialties, one to surgery and the surgical specialties, and one to obstetrics, gynecology, and pediatrics. Each student is provided with room, board, uniforms, and laundry for the entire year at no charge to the student.*

The essential control and supervision are the responsibility of a full-time member of the faculty, an assistant to the dean, appointed as over-all coordinator of the program. He works with departmental coordinators and full-time faculty members appointed by the heads of the respective departments.

The "case method" of teaching is used almost exclusively; there is a schedule of conferences, seminars, and clinical demonstrations. Each student is required to present cases. He early acquires habits of self-education, of critical evaluation, and diagnostic and therapeutic accuracy and develops a genuine understanding of patients as human beings.

have devoted their lives to this specialized field of medicine but among those individuals who are the products of this field, and who, by virtue of the fact that they have been subjected to the system that produces doctors of medicine, acutely recognize the inadequacies of medical teaching as it has existed. Over the past few decades these inadequacies have been brought into sharper and sharper focus. The efforts to correct these shortcomings have become greater and greater. More and more attention has been paid to these efforts, and numerous new approaches have been made. Each approach has proved to have some merit, some more than others. But each approach, good, bad, or indifferent, has been an important contribution to the whole problem of better teaching and preparation of the doctor of medicine. Just as in medicine, there are very few absolute certainties in medical education. If any one thing is certain in medical education, it is the fact that no one method, no one approach, is best for every medical college or hospital, for every problem or situation.

The objectives of undergraduate medical education have appeared in many forms in the spoken and written word. Every medical college has stated its objectives in one form or another. Essentially, I think we can say that the objectives of all medical colleges are the same, to produce the best possible doctor of medicine.

Since this is a report of a project being carried out at New York Medical College, I would like to quote pertinent portions of the "Educational Philosophy and Aims" of the college as they appear in the published catalog:

> It is the purpose of this College to develop young men and women who will become not only skillful, wise, thoughtful and sympathetic physicians, but also physicians who will possess broad cultural and social concepts which will enable them to lead useful lives in our contemporary world. Furthermore, it is the purpose to develop in students and teachers alike an appetite for investigation in the basic medical sciences and clinical fields. . . . There are certain distinctive characteristics of this College which serve in the attainment of these objectives. One of the foremost of these is the constant endeavor to inculcate in the minds of faculty and student alike that each has the same broad educational and ethical goals, that each is a member of a medical community in which the same aspirations, desires, problems and needs are shared. Accordingly, students enter into a partnership with the faculty in which they work side by side to solve the shared problems of the classroom, laboratory and clinic. Such a student-teacher relationship, operating on as individual a basis as possible, brings eager, interested students into close relationship with devoted teachers, a circumstance which cannot fail to result in a high degree of enthusiasm and scholastic excellence. It is inevitable that independent workers will be developed who will be able to think clearly and analytically so that when they are confronted by new and unprecedented situations they may be counted on to deal with them in a direct and logical manner.
>
> The Faculty aspires to produce in each student a knowledge of the basic fundamentals that will permit him to analyze clinical problems as they arise and to solve them in a logical manner. In this way genuinely competent physicians, resourceful and having potentialities of professional growth will be graduated. . . . It is an important part of the program that the student be confronted with examples of problems with which he must be able to deal with reasonable assurance and success as a physician.

The following portion refers specifically to the resident clinical clerkship:

> During this period of medical education, the program has as its keynote "learning by doing." Under the constant and close supervision of members of the medical college faculty, selected for their ability to teach clinical subjects, students are guided in the application of their basic science knowledge to the diagnosis and management of disease. Through this close student-teacher relationship, the experience of the clinician is recreated and shared.

This educational philosophy, part of which is quoted above, is directly responsible for the development of the plan of instruction that incorporates the resident clinical clerkship. Around and upon these stated aims of the college and the faculty is built the curriculum of the college. The resident clinical clerkship is only one important facet of this curriculum. This program has been planned in keeping with these ideals and aims.

Formation of Resident Clinical Clerkship Program

In 1941, Dr. J. A. W. Hetrick became the dean of New York Medical College. Under the leadership of Dr. Hetrick, the faculty approved the adoption of the resident clinical clerkship program in 1946. Initially, the program was established on an elective-selective basis in a very modest manner. A limited number of students were allowed to indicate a choice between the standard fourth year program and the resident clinical clerkship program. At that time, this program was set up in five hospitals that were affiliated with the college for teaching purposes, the Flower and Fifth Avenue, Metropolitan, Morrisania, Queens General, and New York City hospitals. From the start, the administrations of these hospitals gave their fullest cooperation.

As the program developed, the interest of the students increased, and, by 1951, 83% of the student body was indicating a preference for this program. At that time, a careful review and evaluation of the program indicated the initial success of the first phase, and the faculty council, again under the leadership of Dr. Hetrick, voted to replace the standard fourth year format with the resident clinical clerkship and to place all fourth year students under this program. This was done with the fourth year class undertaking its studies in 1952.

It soon became apparent that the difficulties of maintaining five complete educational programs at five different hospitals, on a large scale, with such problems as control, supervision, and uniformity of curriculum, were too great. It was decided to limit the program to Flower and Fifth Avenue and Metropolitan hospitals, two hospitals under the direct and complete professional control of the faculty of the college. At the present time, these two hospitals are participating in the program. In addition, students are assigned to Bird S. Coler Hospital for specialized training in geriatric and chronic diseases and to the Veterans Administration Hospital at Lyons, N. J., for specialized experience in psychiatry and neurology. In a few paragraphs I have covered the historical background of the program. In so short a résumé, only the highlights could be covered, and, of course, no real idea of the myriad of problems involved could be touched upon.

The planning of this program, from the beginning, was based upon sound fundamental educational principles. The main purpose of this program is not, and was not, I repeat, not, to provide service to a hospital. The main purpose of this program is to provide a sound foundation in a realistic way for the practice of medicine; to provide an opportunity for the student to apply the fundamental principles already learned to actual practice of medicine; and to provide a learning environment in which the student can develop habits of sound clinical judgment, and practice, based on supervised experience stemming from responsibility in keeping with the students' stage of learning. The rewards to the hospital participating in this program can be measured in terms of superior medical care of patients, resulting from a stimulated professional staff and increased supervision. It has been said that there is no greater educational stimulus than the constant stimulation of eager, interested, sincere students. This has proved to be true with the resident clinical clerkship, and the spark is felt throughout all levels of the professional staff.

Division of Academic Year

The resident clinical clerkship is planned on a 12-month academic year. For purposes of scheduling, the year is divided into three four-month periods. One period is devoted to medicine and the medical specialties, one to surgery and the surgical specialties, and one period is divided between obstetrics-gynecology and pediatrics. A minimum of two months each is devoted to general medicine and general surgery. In addition to the usual specialty experiences, a four-week period is devoted to rehabilitation and geriatric medicine and a four-week period to neurology and psychiatry. Each student spends the same amount of time on each service.

At the beginning of each academic year, the resident clinical clerk is given a comprehensive brochure covering the program. This brochure includes hospital assignments, general information covering the program, specific rules and regulations governing general conduct at each hospital, a master conference schedule, a surgical and medical conference schedule of required conferences and seminars, a completely detailed assignment schedule for the entire year, and complete schedules of activities of each service. Each student is provided with room, board, uniforms, and laundry for the entire year at no charge to the student.

Upon arrival at the hospital, the day before undertaking assignments, a formal orientation program is held. The dean, department directors, coordinators, the hospital administrative staff, and the hospital nursing staff welcome the students. Planned activities are designed to familiarize the student with the physical plant and with his responsibilities.The educational program, which actually includes all activities of the entire year, is designed to approximate as realistically as possible the actual practice of medicine. Every effort is made not to separate teaching and patient care, since these two are inseparable and to attempt to separate them would be to create unrealistic and unnatural barriers.

Administration of the Program

For purposes of control and supervision, the most important single factor in the success of such a program, an assistant to the dean has been appointed as over-all coordinator of the program. This coordinator is a full-time member of the faculty and for this phase of his work is directly responsible to the dean. Since the responsibilities of the department directors are so great that it is impossible for them to assume direct personal supervision of the departmental program, each director is asked to appoint a departmental coordinator to supervise the department's program. This coordinator works with the director and the dean's coordinator at all times in planning the departmental program.

The departmental coordinator is assigned specific responsibilities for student and teaching faculty supervision. It is his responsibility to see that, within his department, students carry out their responsibilities and assignments and that assigned teachers adhere to their schedules. In the event that a teacher is unable to keep his scheduled appointment with the students, it is the responsibility of the coordinator to obtain a replacement. The departmental coordinator receives his authority and responsibility from his director and in turn is responsible to him.

The dean's coordinator actually acts as a liaison officer between the various departments and the dean, and the hospital administration and the dean, in academic matters involving the program. Frequent meetings of coordinators are held, at which time problems of mutual concern are discussed and possible solutions worked out. The dean's coordinator devotes more than half of his full-time responsibility to the supervision of the program. Departmental coordinators all teach in the program and devote about one-third of their full time to supervisory assignments. With an occasional exception, the coordinators are usually younger full-time faculty members. Coordinators are chosen for their interest in academic medicine, and all coordinators are paid. A field office of the dean is located at each hospital, and the dean makes a practice of making frequent personal visits to the hospitals.

Case Method of Teaching

The "case method" of teaching is used almost exclusively in this program. Patients are assigned to clerks in rotation, and every effort is made to limit the number of patients assigned to any one clerk to six or eight. As soon as a patient is admitted, the clerk is notified. It is the responsibility of the clerk to complete the admission history and physical examination, which become a part of the patient's chart, and to write the admitting orders. The resident must be notified. It is the resident's responsibility to do the usual admission history and physical examination and to make an appropriate note. After this procedure, it is the resident's responsibility to review the case with the student and to countersign the orders before they are carried out. Regularly scheduled rounds are made by the visiting staff. Each student presents his case to the visiting staff making rounds, and appropriate discussions are held. Students are allowed to request consultations with the approval of the resident and the

visiting staff. Specialty rounds are made periodically on unusual cases. The student is allowed to exercise full charge of the case but at all times is supervised by the resident and assigned members of the attending staff. Each student follows his case through the entire hospital period of the patient or until the student changes services.

In the surgical specialties, the student is assigned to duties in the operating room. Each student scrubs on his own case and actually assists during the operation. The amount of time spent in the operating room varies from service to service, but every effort is made to restrict the amount of time to a reasonable percentage of the whole, so that the training does not become unbalanced. But it should not be assumed that an operating room experience cannot be educationally profitable.

A regularly scheduled series of required conferences is maintained. There is a combination of regular staff conferences and special student conferences. The schedule is so arranged that no student has more than one conference a day, with an occasional exception, but never more than two. Students are encouraged to participate actively in all conferences, both regular staff conferences and student conferences, and each student is required to prepare and present cases at conferences.

Each student is assigned on a schedule very similar to a graduate intern's schedule. Each student has nights on and nights off. These assignments vary with the service from every other night on to every third night on. Ample opportunity for reading and study exists under this program, and students are expected to review current literature and textbooks pertaining to the cases seen.

Comment

Obviously, it is impossible to cover all of the multitude of details involved in the functioning of this program in so short a report. Some of the important details have been covered to provide an over-all picture of the program. Certainly, it would be less than truthful if I were to attempt to tell you that the program is functioning perfectly. Problem areas are discovered, and this is to be expected. Constant study and evaluation of the program is being carried out. The "bugs" in the program are worked out by the joint effort of all of the faculty members and department directors concerned. It can truthfully be stated, however, that the program has proved to be a very satisfactory and desirable approach to the teaching of clinical medicine.

In view of previous discussions concerning the resident clinical clerkship, I feel compelled to comment briefly on the relationship of such a program to the graduate internship. While there are no graduate interns at the hospitals participating in this program, it has not been the purpose of the program to replace or eliminate the graduate internship. In this particular program, as it has developed, it became apparent that the graduate internship was a fifth wheel that detracted from the effectiveness of the program rather than added to it. Certainly, there is a place and a need for the graduate internship. This program has made the graduate internship, for our students, a richer and fuller experience. In fact, it has given real meaning and substance to the word "graduate" in the expression graduate internship.

The resident clinical clerkship, soundly organized and administered, provides a mature approach to the preparation of the doctor of medicine. It is a concept that is educationally sound and in keeping with the fundamental principles of education and, in particular, with the educational aims and objectives of undergraduate medical education. It provides a real opportunity for the student to acquire the fundamental clinical knowledge necessary for the practice of medicine and, in addition, provides a realistic "learning laboratory" for the student to apply, in a meaningful way, the knowledge he has accumulated.

The student readily acquires those habits that are so important in later life, the habits of constant self-education, critical evaluation, and respect for diagnostic and therapeutic accuracy. The student rapidly develops a sincere and genuine understanding of patients as human beings, and he is provided with the opportunity to develop a confident, competent, and sympathetic attitude in the handling of patients and family under conditions that are devoid of the atmosphere of a planned situation. The student develops an understanding of and a competence in the basic skills of medicine that go beyond the mere ability to become technically proficient. He develops an appreciation of the ability to use the tools at hand, not only the batteries of laboratory tests but the too often neglected tools possessed by the student himself, those of the senses. He becomes experienced as a working member of a team and develops an appreciation of the importance of teamwork and an appreciation of the role that others play in the care of the sick. He develops an awareness of the moral and ethical principles of medicine through his daily contact with real-life situations and rapidly realizes his responsibilities as a physician to the patient and his family, to the hospital, to his fellow physicians, to his co-workers, and to the community. All in all, it is a richly rewarding experience. Granted, these educational accomplishments may be made in other ways. We feel that this method is proving to be a very realistic and worthwhile approach.

Medical Problems Producing Acute Abdominal Symptoms.—The early pneumonia which has not as yet produced characteristic physical or x-ray findings and the coronary occlusion which is not as yet reflected in the electrocardiogram are the two principal medical diseases which at times can very realistically simulate acute surgical diseases of the abdomen. Herpes zoster in its prevesical stage can produce rather severe pain which may appear to be abdominal in origin. Some cases of severe gastroenteritis prior to the onset of diarrhea may closely simulate an abdominal catastrophe worthy of immediate operation. . . . One may occasionally encounter a gastroenteritis in which diarrhea is either absent or mild, and the abdominal symptoms very acute. In attempting to distinguish the surgical from the nonsurgical conditions under these circumstances the strangulation obstructions are most likely to be missed. The diarrhea per se must always be regarded with some reservations, however, as it may be masking a surgical problem. . . . Several more conditions are worthy of mention. The sickle cell anemia in colored patients, and the porphyruria characterized by pink urine may produce acute abdominal symptoms. The tender mass in the lower abdomen which will disappear if a catheter is introduced into the bladder is presumably an elementary problem but occasionally can be overlooked.—H. P. Jenkins, M.D., Diagnosis of the Acute Surgical Abdomen, *Surgical Clinics of North America,* February, 1956.

TEACHING OF FAMILY PHYSICIAN'S APPROACH BY A DEPARTMENT OF PREVENTIVE MEDICINE

William L. Fleming, M.D., Chapel Hill, N. C.

• *An attempt to teach fourth year medical students the family physician's approach is here outlined. It is based on a general clinic of an outpatient department of a teaching hospital and involves 15 students at a time and occupies 10 weeks. A home health service is associated with it and affords many illustrations of the advantage of home supervision of some patients.*

While the preparation of medical students for general practice and the training that will be needed by the family physician of the future have been difficult to plan, a two-year general practice training program is now offered as special graduate work.

The University of North Carolina School of Medicine and its teaching hospital have a graduate teaching program in preparation for general practice, but there is no undergraduate program with this sole objective. Consequently, this report really concerns the attempt to teach fourth year medical students a broad approach to consideration of patients' problems, a "family physician" approach, which we hope will be of use to any type of physician, generalist, specialist, or new type of family physician our graduates might become.

I am director of the general clinic in which the program is based, but the program is not just an activity of the department of preventive medicine, of which department I am chairman. In fact, the assignment is a fourth year clerkship in medicine and preventive medicine in which the departments of psychiatry and surgery, and, to some extent, other clinical departments, actively participate. Perhaps the title might more properly be, "Teaching the Family Physician's Approach, Program Based on an Outpatient Clinic of the N. C. Memorial Hospital."

The University of North Carolina School of Medicine, which had formerly given only the first two years of medical school, started its clinical teaching program in 1952. Its teaching hospital, the North Carolina Memorial Hospital, is located along with the medical school and university in Chapel Hill, a small town in a predominantly rural state. Outpatients as well as inpatients, indigent and medically indigent as well as private patients, are patients referred by physicians practicing predominantly in rural areas and small towns all over the state.

General Clinic

The general clinic is the "core clinic" of the public outpatient department. It represents an attempt to have a clinic be a combination of the usual teaching hospital's general medical clinic and surgical clinic, with active participation of psychiatrists in the clinic and with medical subspecialty clinics, lesser in number than usual, functioning as sections of the general clinic, rather than as separate clinics. On-the-spot consultation by a number of different specialists is available in the general clinic itself.

The fourth year clerkship in the general clinic currently involves 15 students at a time and occupies 10 weeks. Every effort is made to have the fourth year student serve as physician to the patient with preceptors in the role of consultants. In the general clinic proper, rather than in medical specialty sections of it, only new patients are assigned to students. Examinations begin in the early morning to permit the maximum in indicated laboratory work and consultation to be obtained on the patient's first visit. Each student presents his case in detail after examination to an assigned preceptor, at which time every effort is made to have the student consider all of the patient's problems broadly and not just the chief complaint. Consultation on each patient is later obtained with the social service. Students assist the preceptor with a preliminary report to the referring physician on the first day of the patient's visit. Within two weeks, a more definitive report to the referring physician is prepared by the student for the preceptor's signature. Every effort is made to facilitate the follow-up of the patient by the student and the same preceptor, as associates of the referring physician, for as long a period as is indicated during the 10-week clerkship, after which the patient is returned to the referring physician with a final note. Patients with complicated problems of management are followed with the consent of the referring physicians periodically in specialty sections for longer periods.

Tables 1 and 2 show in condensed form some aspects of the schedule of student activities in the general clinic. Schedule A shows the schedule of activities on days on which a student is assigned to examine a new patient. Schedule B shows the schedule of activities on days on which return patients are seen. There are a number of other teaching activities, lectures and rounds, primarily for third year students or house staff, which the fourth year students in the general clinic may be able to attend if their time should not be completely occupied. One of the early morning daily teaching conferences might be commented on in some detail, since it is a responsibility of mine and of the department of preventive medicine, although several members of other departments participate in these conferences. This is the session on Saturday mornings, which lasts from 8 a. m. to 9:30 a. m. (instead of 8 to 9 a. m. as on other days). During one of the 10-week clerkship periods, the following topics are discussed: (1) present status of Salk vaccine, (2) peptic ulcer, (3) hemolytic streptococcic infections and their sequelae, (4) tobacco smoking and cancer, (5) epilepsy, (6) syphilis, (7) arteriosclerosis, and

Professor of Preventive Medicine, School of Medicine, University of North Carolina.

Read before the Annual Congress on Medical Education and Licensure, Chicago, Feb. 13, 1956.

The Commonwealth Fund supported the development of the teaching program of the general clinic.

(8) hepatitis. At these sessions two students working with references and other aids furnished them present data over a period of about an hour, followed by a discussion period lasting approximately half an hour. Similarly, at several of the other early morning conference periods, emphasis is put on presentation of material by students rather than by staff members.

TABLE 1.—*Student Schedule A of General Clinic, Showing Schedule for Examining New Patients*

8-9 a.m.	Teaching conferences: medical emergencies, history taking, interpretation of x-rays and electrocardiograms, clinical physiological conferences, home health service, and natural history of disease
9-11 a.m.	Examination of new patients
11-12:30 p.m.	Student-preceptor conference on new patient
2-5 p.m.	Screening consultations and consultations in medical subspecialty sections on new patient

TABLE 2.—*Student Schedule B of General Clinic, Showing Schedule for Return Examinations*

8-9 a.m.	Teaching conferences
9-10 a.m.	Return patients
10-10:30 a.m.	Conferences on return patients with original preceptors
10:30-12:30 p.m.	Teaching rounds (6 days) including tumor clinic (1 day) and rounds on hospitalized patients (1 day)
2-5 p.m.	Scheduled participation in neurology, gastrointestinal, metabolism, dermatology, allergy, seizure, chest, and cardiac sections

Home Health Service

There is a home health service associated with the general clinic, in connection with which students over the entire 10-week period furnish medical care to homebound medically indigent patients in a 10-mile area around the hospital, under the supervision of certain staff members of the general clinic. Home nursing care is provided these patients by nurses on the staff of the local health department.

Table 3 shows the current list of patients being followed on the home health service. Students are usually assigned one such patient at a time and visit the patient routinely once weekly but, in addition, as often as the patient's health problem warrants. The student serves in the role of family physician and makes visits by himself unless assistance is indicated or requested. Fellows and residents supervise the student's care of his home patient.

Some of these cases illustrate spectacularly the advantage of home supervision of patients. A 5-year-old cerebral spastic child with epilepsy, in spite of drug therapy prescribed on occasional outpatient visits, was still having 20 to 30 fits per day and was almost continuously in the stupor of a postictal state. Home supervision resulted in drug therapy being made really continuous, cleared up confusion that was found to exist as to dosage of different drugs, and resulted in seizures being reduced to much less than one a day with great improvement in the patient's mental condition and in the ease of caring for her. Another patient, bedridden for eight months after a cerebral accident with residual hemiplegia and decubitus ulcers, was gotten out of bed and rehabilitated to the point that she could get around the house by a combination of good medical care, nursing care, and physiotherapy. Limitations of home care also are pointed out, as in a recent case in which a student observed a positive Trousseau sign in a patient in taking the patient's blood pressure; this led to the discovery of a severe metabolic alkalosis, presumably precipitated by a diarrhea, the severity of which had been masked by incontinence.

Comment

Some of the factors that seem to facilitate the development by students of a broader point of view of patients' problems are as follows: First, the program involves ambulatory patients, less removed from their environment than hospitalized patients, so that it is easier for students to understand the importance of family relationships and other social and environmental factors in illness. This is particularly true of patients seen on the home health service. Second, every effort is made to have the outpatient teaching program be as effective and attractive as the inpatient program. In contrast with the common pattern in teaching hospitals, staff members with greatest seniority do not confine their teaching efforts to inpatient teaching but participate in the general clinic teaching program. Teaching rounds are conducted each day on carefully selected patients.

Third, ambulatory patients seen in the general clinic are much more representative of a cross section of practice than are hospitalized patients. The teaching emphasis placed on the less serious and earlier forms of illness, along with the frequent occurrence of emotional illness seen in these patients, serves to emphasize the importance of these problems. Fourth, the preceptoral staff is composed of generalists and specialists: local general practitioners, internists (full time, part time, and voluntary), university infirmary staff members, and psychiatrists with special training in internal medicine. These men have in common medical competence and a desire to participate in a teaching program on ambulant patients designed to give a broad point of view to students. We feel that these men are more effective in teaching students in an intramural program than the same men would be in an extramural program. Special care is given in the selection of the family physicians, generalists and internists, brought in from the outside to participate as preceptors. They are well qualified in internal medicine and demonstrate their enthusiasm by not only taking time off from their practice but driving in from as far as 50 to 75 miles.

TABLE 3.—*Home Health Service, Current List of Patients*

Case No.	Race	Age, Yr.	Sex	Disease
1	N	71	F	Hemiplegia, arrested tuberculosis, heart disease
2	N	70	M	Cerebral arteriosclerosis with psychosis
3	W	43	F	Epilepsy, pyelonephritis, thrombophlebitis
4	N	54	M	Heart disease, hemiplegia, Jacksonian epilepsy
5	N	21	M	Paraplegia
6	N	55	F	Lymphoma
7	W	76	F	Diabetes, peripheral vascular insufficiency
8	N	44	F	Diabetes, blindness
9	N	74	M	Congestive heart failure
10	N	76	F	Hemiplegia
11	N	56	M	Carcinoma of prostate, spastic paraplegia
12	N	101	F	Senility, arthritis
13	N	5	F	Cerebral palsy, epilepsy, mental retardation
14	W	71	M	Chronic brain syndrome, diabetes
15	N	55	F	Heart disease, hemiplegia, diabetes

Fifth, emphasis is placed by all staff members on the importance and opportunities of the family physician, as exemplified by requiring students to use the referring physician's name and not the somewhat derogatory term "local medical doctor." Referring physicians are encouraged to send in pertinent information on patients. Students are made to realize the necessity of referral by the general physician of patients needing special facilities for diagnosis and treatment.

Sixth, special help is given students in dealing with emotional problems by having the psychiatrists with special medical training serve as preceptors for them with patients with any type of problem, participate in conferences, and assist other preceptors in teaching students to recognize and treat patients with emotional problems by superficial psychotherapy of a type general physicians could easily use. Seventh, the program offers excellent opportunities for emphasizing the importance of the doctor-patient relationship, for seeing patients over a period of time as partners of the referring doctor (usually a family physician), for learning to deal with consultants and send out prompt medical reports, and for learning the advantages of group practice built around the family physician approach—hopefully, a vital component of medical care of the future.

Finally, I would like to emphasize that while the University of North Carolina has no special program for undergraduate training for general practice, we do have a special graduate program. Much discussion and effort has gone into the design of the two-year general practice training program we now offer. Part of our trouble in designing this program has come from the difficulty in getting agreement upon the sort of training the general physician, or, better, the family physician, of the future should have. Most of us agree that the family physician of the future should have a good grounding in internal medicine, special training in pediatrics, special experience in the emergency room and the outpatient department, and training in obstetrics if he is to practice "solo" in a small town or rural area.

AN ADVISOR (PRECEPTOR) PROGRAM FOR INTERNS AT A GENERAL HOSPITAL

Sidney Leibowitz, M.D., New York

• *A program was worked out whereby a staff member, designated as the monitor, assigned each of 16 interns to a staff advisor or preceptor. Each preceptor was expected to function as a mature, experienced advisor in personal contact with the neophyte in medicine, to discover dissatisfactions, and to submit reports on the progress of the intern and of the program.*

After a year of operation, the program was enthusiastically endorsed by interns, preceptors, administrative officers, and monitor. Maladjustments were recognized and corrected early, and the interns fulfilled their assignments well, derived much benefit from their first year, and stimulated their teachers and preceptors to greater efforts.

On July 1, 1954, the Beth Israel Hospital in New York City initiated a program, unique in a general hospital, whereby a staff advisor was assigned to each of its 16 interns during his year of internship. In this program these advisors have been called "preceptors," in the sense that they are guides and directors on an intimate, personal basis (see section on Scope), although it is recognized that the term "preceptor," as more commonly and narrowly defined, implies a tutor or teacher. This program is now (August, 1955) entering its second year of operation. This report is intended to describe the background for the adoption of the program, its purposes, its organization, its method of operation, and the experiences and lessons derived during its initial year in operation.

Background

In recent years the existence of serious problems has become increasingly apparent to all concerned with the selection and training of interns. These generally prevailing problems may be summarized as follows: A shortage of intern candidates exists with respect to the number of vacancies. Six thousand interns are available to fill 11,000 internships in the country. Necessarily the competition among hospitals has been keen for the interns of excellence and even for the interns a notch or two lower than the top. The situation prevailing before World War II has been completely reversed. Whereas the intern then eagerly sought the first-rate hospital for his training, the shoe is now on the other foot in most cases.

The one-year internship prevails throughout most hospitals. The two-year mixed or rotating internship, while never the common pattern, was valuable in the past for intern training. Today it has mostly disappeared under the dual stress of military service requirements and of the system of preparing for board certification in a specialty. This latter system allows credit for one year of the internship toward qualification for specialty training. (Some specialty boards do give credit for more than one year of internship, provided the second year is a straight internship in the specialty field concerned.) These factors in the situation are distinct from the persisting differences in opinion concerning the type of one-year internship that is most desirable—straight or rotating. The only part of this continuing polemic that apparently is resolved is that the rotating internship shall not be a "vibrating" internship; that is, the intern shall not change services too frequently but shall be exposed in prolonged periods to each of the four major services: medicine, surgery, pediatrics, and obstetrics-gynecology.

Associate Physician, Beth Israel Hospital.

Military service has played an important part in the plans and attitudes of the recent physician-graduate. Either he had already had such service and therefore was older and possibly married, or he faced the prospect of an imminent call to duty. The average intern now had a wife and possibly children. In this atmosphere, interns were very critical of conditions relating to food, stipend, and lodging if they were not deemed satisfactory. Nonetheless, most interns still judged the quality of their internship by its training and educational value.

These factors were also operating at Beth Israel Hospital. The medical board's committee on interns and education recommended and effected many improvements in the educational program. In addition, the stipend was increased, where necessary, to parity with levels current in outstanding general hospitals in the community. Further attention was devoted to the attractiveness of the food, both in preparation and in serving. New intern quarters were erected that were not only highly comfortable but beautifully furnished.

Finally, on April 28, 1954, the committee approved the suggestion that a vital step in enhancing the quality of the internship would be the assignment to each intern of a preceptor carefully selected from the attending staff. The organization and supervision of this program was assigned to me, as monitor for the preceptor program.

Scope

This plan was envisaged not as a training or teaching program but rather as a means for "tightening" the internship in all its nonprofessional aspects. It does not propose to duplicate existing facilities and provisions for professional training and teaching in the hospital. The preceptor is intended to serve primarily in a nonprofessional and advisory capacity. This implies that the assigned intern need not be working in the professional department of his preceptor (as a matter of fact he inevitably does so for a limited period of time, since the internship is rotating), nor need he be primarily interested in the same sphere of medicine for his permanent career. Basically, the preceptor is expected to function as a mature, experienced advisor in personal contact with a relative neophyte in medicine.

Purposes

Within the scope indicated, the following things may be listed as the immediate purposes of the program, bearing in mind that its ultimate purpose is enhancement of the internship: (*a*) to provide counsel to the intern as he seeks it on any aspect of his internship; (*b*) to call special attention to the existence of certain hospital facilities (for example, the library or facilities and provisions for research) and to the desirability for their maximum utilization; (*c*) to encourage the individual intern to participate fully in the available training programs and facilities, departmental, hospitalwide, and outside the hospital (for example, academy of medicine); (*d*) to render advice regarding future plans—medical, military; (*e*) to acquaint the intern with the existence of the hospital alumni association and to encourage his eventual activity in that organization; (*f*) to refer the intern to the proper person for assistance as specific problems arise that require special help other than what the preceptor can render; (*g*) to intercept dissatisfactions, as they arise, on an individual basis and to attempt to solve the problem involved (if such a problem resists ready solution, the preceptor should first sift the real from the spurious and then advise the central monitor of its validity with any accompanying recommendation for corrective action); (*h*) to submit reports on the preceptor program in general and concerning the progress of the individual intern in particular.

Organization

Upon the authorization by the medical board and its committee on interns and education to proceed with this program, the monitor first defined the scope and purposes (listed above) and then proceeded to select 16 preceptors from among members of the attending staff of the hospital. This was accomplished in consultation with key members of the senior attending staff. It was decided not to ask any chief of service to serve as a preceptor nor to call upon too youthful a member of the staff. The selection was confined to associates and adjuncts. The qualities sought in the preceptors were (1) past expression of interest in dealing with interns and residents and understanding of their problems; (2) maturity; (3) past indication of sincere interest in the welfare of the hospital; (4) evidence of ready availability and frequent presence in the hospital.

A list of 16 men was compiled. The monitor sought each man out personally, briefly discussed the plan of the program, and issued a "feeler." All but one of these first 16 physicians readily consented to serve if asked. One man expressed great interest but asked to be excused because of lack of sufficient time available for the purpose of the program. A 17th man was selected for this spot; he readily consented to serve. The 16 men who had accepted these preliminary "feelers" were then formally invited to serve as preceptors.

In order to prepare fully prior to the commencement of the intern year on July 1, 1954, two organizational meetings of the preceptors were held in June. The background, general purposes, and scope of the plan were presented. The specific purposes were discussed. The nonprofessional role of the preceptor was emphasized. The need for regular reports to the monitor was recognized. These would be submitted after each of the first two quarters and toward the end of the intern year. It was agreed that these and all other reports by preceptors would be treated with confidence. Assignments of the preceptors to interns were made by matching names in two alphabetical lists, except in one instance, where a preceptor asked to be assigned to a graduate from his medical school.

The incoming interns were acquainted with the existence and purposes of the preceptor program by the monitor during the two days of formal orientation that immediately preceded the beginning of their intern year. The preceptors for each intern were announced then. The preceptors met the interns at the hospital on June 30, 1954, at a social gathering that climaxed these two days of orientation. The program was in operation.

Operation

During the summer of 1954, one preceptor met with a serious accident, and a new preceptor was designated in his place. Otherwise, no change in personnel occurred. Four meetings of the preceptor group were held between September, 1954, and June, 1955. The first of these meetings, held after the summer's lull, was primarily intended to discuss the report form drawn up by the monitor for future use (see table). At the other three meetings, held after receipt of each of the three regular reports from the preceptors, the monitor submitted a summary of the data in these reports. In addition, the monitor presented a digest of the data for the entire year at the final meeting. Full discussion of the material ensued at the meetings. It is worth reemphasizing that the reports by the individual preceptors were treated confidentially and never left the possession of the monitor. The digest of these reports plus any appropriate recommendations were sent to the committee on interns and education following each meeting of the preceptor group. The preceptors arrived at these recommendations (see section on results) after considerable thought and discussion. The recommendations were not necessarily the same as those suggested by an intern, but most often resulted from an observation submitted by more than one intern.

The essence of the program's operation was the informal contact constantly being maintained by the preceptor with his intern. The degree of such contact naturally varied with the individuals concerned. From the viewpoint of the monitor this was continuous and dynamic. Frequently during the course of the year a preceptor would confer with the monitor concerning a specific puzzling situation on which he desired help or consultation. Usually this conference led to a satisfactory solution. The administration rarely was brought into these situations unless the assistance of the executive director's office was required. The monitor talked to each preceptor at perhaps monthly intervals regarding his intern's general progress. At no time during the year did an intern contact the monitor directly, although the interns were advised in their orientation period that this channel was available to them should they wish it. This seemed to reflect satisfaction by the interns with their preceptors, which justified the confidence in the preceptors held by those who selected them with care.

The relation of the entire program to the administration has been intimate, because predominantly the program is more administrative than professional. It would be difficult to define in exact percentages the relative roles of the medical board and the administration in supervising and assisting the program. It might be best expressed by saying that the medical board originated and launched it. Thereafter the monitor has worked closely with the office of the executive director in administering the project, although he submits all reports and recommendations to the medical board, through its committee on interns and education. The administration has scrupulously remained in the background, while offering the continuous assistance and cooperation so vital to the smooth functioning of the plan.

Report Form Used in Preceptor Program

FORM OF REPORT OF PRECEPTOR

(Due October 1, January 1, May 1)

Date of report.....

1. Name of intern assigned.....
2. Medical school.....
3. Health status of intern during report period.....
4. Status regarding military service.....
5. (**Only in October 1 report**) Main factors influencing application for BIH internship.....
6. Reaction of intern to services assigned during report period:.....

.....

Service	Favorable	Unfavorable	Remarks
Ward Surg.	....	....	.....
Pvt. Surg.	....	....	.....
Ward Med.	....	....	.....
Pvt. Med.	....	....	.....
Neur.	....	....	.....
OBS.	....	....	.....
GYN.	....	....	.....
PED.	....	....	.....
EENT	....	....	.....
Admitting	....	....	.....
Urology	....	....	.....

7. Contacts between intern and preceptor
   a. Frequency (express in average per week or month).....
   b. Site (hospital only?).....
8. Problems raised by intern in report period
   a. Specify .....
   b. What action did preceptor take?.....
   c. Results .....
9. Intern's participation in educational program
   a. Attendance record at Tuesday afternoon seminars.....
   b. Reasons for absences, if any.....
   c. Current status of intern's performance and evaluation record

      .....
   d. General comments concerning training program.....
10. Does intern know of students from same medical school whom he would recommend for internship at BIH?.....
    a. Is intern enthusiastic enough about his own internship at BIH to encourage such application and have such applications resulted? (Be specific here in replies; explain fully any negative answer) .....

       .....
    b. (**Only in report of May 1**) Overall evaluation of internship

       .....
11. Has intern expressed any desire to continue at BIH in resident capacity? .....

    If yes,
    a. Service .....
    b. Advice given and action taken.....
    c. Results thus far.....
    d. What is your opinion (**confidential**) concerning advisability of recommending him for this position?.....
12. Plans of intern for next year.....
13. (**Only in report of May 1**) Evaluation of preceptor program by intern .....
14. Add any other information deemed pertinent.....
15. Recommendations, if any.....

NOTE: Use reverse sides, or additional sheets, if necessary.

.....
(Signature of Preceptor)

Results

The results of this program are not fully apparent as yet. A longer period of operation is required for an exacting evaluation. Nevertheless, even after one year, valuable information has come to light, some of it statistical. It may be stated at the outset that on all sides there was an enthusiastic endorsement of continuing the program. Interns and preceptors felt so. The board of trustees and the medical board felt so. The monitor had ample reason to feel the same.

The program appealed to the interns from the start because it demonstrated warmth and interest on the part of the hospital and its staff. The preceptor is of most assistance during the early months of the internship, when the intern is "getting his feet wet" and orienting himself to a new phase in his medical career. However, his services are also of considerable value to the intern in the remaining part of the year. The problems encountered by the preceptors and reported in writing to the monitor totaled 38. Sixty per cent of these occurred during the first three months, 24% in the next quarter, and 16% in the second half-year. Mostly these were personal problems and lent themselves to ready solution. Examples are need for medical care or advice by the intern or a member of his family, advice regarding future medical plans and residency appointment, and need for information regarding military service. In addition to such purely personal problems, several recurrent nonpersonal items arose that called for the attention of the entire preceptor group. One example of this was general dissatisfaction with the assignment of the night emergency-room coverage to the intern on the male medical ward. This was worked out with a change in future schedules. Another example was the expressed need for a room on each floor and ward where the intern could write in quiet and without disturbance. An attempt to accomplish this is under way.

The varied services were subjected to critical evaluation by the interns, and not every service came off with flying colors. Where any unfavorable comments were repeated during the course of the year, the chief of that particular service was advised of the criticisms, with no names being mentioned. At the end of this intern year three services were subjects for such repeated criticisms.

The contacts between the intern and his preceptor were mainly at the hospital, but not exclusively so. The number of contacts varied from one per day to one per month. It was learned that no special conference room was required for these meetings. The preceptor group decided that three formal meetings per year are ample hereafter, particularly since the same preceptors (with one exception) are continuing to serve in this second year. (The same preceptors will continue for another year so as to avail the program of their experience in this role. After the second year it is probable that some of the preceptors will be replaced by members of the attending staff who have asked to serve whenever a vacancy exists. This volunteering to serve as a preceptor is an indication, in part, of the repute in which the program is held.) The three projected meetings are for October, February, and June. The last will serve hereafter as the preparatory (organizational) meeting for the next intern year. The health status of the interns was generally good. One intern was hospitalized with acute viral hepatitis for four weeks. He made a full recovery.

As seen through this program, the interns availed themselves fairly well of the existing training facilities and educational program. This was truer during the first half of the year than the second half. The interns on the medical services attended seminars more consistently (75%) than did the interns on the surgical services (60%). Nevertheless, at this point this variance cannot be ascribed with certainty to the difference in service rather than to personal or other factors. More data in this regard is advisable and will be gathered.

Overwhelmingly the interns evaluated the internship favorably, although they did offer several constructive criticisms. Enthusiasm for the internship led some interns to interest fellow graduates from their schools of medicine to apply for the position. Already there is suggestive evidence of the effectiveness of these steerings, but such a point requires several years for fuller evaluation. Interest in residency at the hospital was high during the first quarter of the year. Actually, 4 of the 16 interns are continuing at the hospital in residency training. Several are interested in returning as residents after further training elsewhere. All 16 interns are placed for the next year, 15 in residencies and one in military service.

Recommendations of Preceptor Group

What type of action has the preceptor group formally taken as a result of its activities during the year? This is best answered by listing some of the recommendations (12 in all) that the preceptor group adopted during the intern year and transmitted to the medical board through its committee on interns and education: (*a*) that a review be undertaken of the system of admitting private patients with the purpose of determining whether it is feasible and sound practice to arrange for admission of elective patients in the early hours of the day; (*b*) that emergency-room night coverage be assigned to the intern on pediatrics; (*c*) that the coordinator of medical education be advised of interns' criticisms of Tuesday seminars—medical films wanted, accent on therapy, and stress on more specific subjects (the coordinator of medical education is a member of the attending staff who supervises and coordinates all aspects of the educational program for interns and residents); (*d*) that the nursing department be asked to cooperate with the interns by drawing the frequent gastric-juice specimens once the tube is passed; (*e*) that consideration be given to the desirability and feasibility of setting up a private, quiet section on each floor for the use of the interns in writing their medical notes; (*f*) that a physical examination be arranged for . . . . . (name of intern omitted) as suggested by his preceptor; and (*g*) that resident training of the interns be improved and maintained at a high level because of its importance in intern training.

During the year the preceptor group decided upon several additions to the original form of the preceptor report. These changes include: (*a*) inclusion of a tabulation of all services to which any intern is assigned under

the appropriate section; (*b*) prior to preparing the periodic report, advice to each preceptor in writing by the monitor of the services to which his intern has been assigned during the report period (items (*a*) and (*b*) will permit more uniform and complete reporting of reactions to assigned services); (*c*) statement of military status of intern; (*d*) evaluation of preceptor program by intern (only in final report for the year); (*e*) statement concerning the plans of each intern for the succeeding year (whenever this is known; in any event, in the final report); and (*f*) statement concerning any influence by a previous intern that led to application of the intern at Beth Israel Hospital (in initial report only). The report form, incorporating these alterations, is reproduced as the table.

Conclusions

It is premature to assess fully and accurately the effect and value of this program. However, even as far as it has gone, it has evoked enthusiasm and favorable response uniformly from those associated with it and from those who are on the sidelines watching. From the viewpoint of the monitor, much has been gained by the interns and by the hospital. Either by coincidence or as a result of this program, this first group of interns exposed to it was a happy, efficient group of men. They spent relatively little time "griping," fulfilled their assignments well, derived a great deal from the year, and stimulated their teachers and preceptors to greater efforts.

It will be noted that the plan does not include the resident group. This was by design rather than by accident. The committee on interns and education felt that it would be wisest to confine the program at its start to the interns only and to exclude the residents, at least for the present, because usually the chief of service is close to his resident and in effect is acting as his preceptor.

To our knowledge, this is the first application of a preceptor system to a general hospital. Heretofore it has operated successfully at many undergraduate colleges and also, we are informed, at many medical schools, where both instructional and purely advisory types of preceptorships are in vogue. It has wide applicability in medical graduate training and seems fully suited for use with interns and possibly with residents.

15 W. 84th St.

ALLERGIC ECZEMATOUS CONTACT DERMATITIS DUE TO METALLIC NICKEL

Alexander A. Fisher, M.D.
and
Alfred Shapiro, M.D., New York

• *Nickel was found to be the cause of dermatitis in 198 patients seen over a five-year period. Such patients invariably reacted positively to patch tests with 10% nickel sulfate solution, and the only chemical that surpassed nickel as the causative agent of strongly positive patch test reactions was paraphenylenediamine.*

As a solution for use in the routine detection of sensitivity to nickel, 5% nickel sulfate was found preferable to more concentrated solutions. Patch testing with nickel coins is reliable if the coins actually contain nickel; this metal was replaced temporarily with silver and manganese during World War II.

Of 40 patients whose reaction to nickel was followed over a period of years, only 4 appeared to lose their sensitivity. The two most frequent sites of dermatitis were the ears (from earrings) and thighs (from garter clasps and metal chairs). Patients who recognized the cause of the dermatitis soon discovered means of avoiding it, either by preventing contact or by replacing the nickel-containing objects with others.

The present study is concerned with allergic hypersensitivity in the general population to manufactured nickel articles and with certain special aspects of hypersensitivity to nickel and dermatitis: the persistence or loss of allergic hypersensitivity to nickel, the relationship of sensitivity to nickel to sensitivities to other metals, the role of nickel-containing coins in clinical dermatitis and in skin testing, some clinical features of nickel dermatitis, and some of the methods used by patients to avoid contact with nickel.

In modern living, the opportunity to come into contact with metallic nickel is constantly increasing. It is literally true that, as one leading nickel manufacturer [1] claims, "Nickel is with you and does things for you from the time you get up in the morning until you go to sleep at night." This almost continuous exposure is reflected in the constantly increasing number of patients who are sensitive to nickel.

Procedure

A review of the files of the New York skin and cancer unit for a five-year period from 1949 to 1953 disclosed records of 198 patients with clinical nickel dermatitis and who had had strongly positive patch tests to 10% nickel sulfate (strongly positive, 3 or 4+ [3+: erythema, papules, small vesicles; 4+: erythema, papules, large vesicles]). Among them were 180 women and 18 men from 16 to 63 years of age. Only patients with unmistakable nickel dermatitis and with strongly positive reactions to patch tests with 10% nickel sulfate were considered. We felt that this would rule out nonspecific papular and pustular reactions due to nickel sulfate. In addition, we ascertained that, when a patient had a clini-

From the Department of Dermatology and Syphilology, New York University Post-Graduate Medical School, and the Skin and Cancer Unit of University Hospital.

cal dermatitis due to nickel, invariably patch testing with the standard 10% nickel sulfate solution was strongly positive.

It is of interest also to note, from other records of the unit, that, during the five-year period under consideration, only paraphenylenediamine, which had given strongly positive reactions in 233 patients, surpassed nickel as the causative agent of strongly positive patch

TABLE 1.—*Persistence of Sensitivity to Nickel in Follow-Up of Forty Patients*

Year of Original Sensitivity (3 or 4+)	No. of Patients	1955 (3 or 4+)	1955 Negative
1938	1	1	0
1942	1	1	0
1945	1	1	0
1947	1	1	0
1949	2	2	0
1950	3	2	1
1951	13	13	0
1952	6	5	1
1953	12	10	2
	40	36	4

test reactions. It is quite possible that in the future we may find nickel to surpass paraphenylenediamine as an elicitor of strongly positive patch tests. A review of a six-month period from October, 1954, to June, 1955, revealed 45 patients to have had nickel dermatitis with strongly positive tests as compared to 39 patients reacting to paraphenylenediamine.

It was decided to recall and restudy as many patients who were sensitive to nickel as possible. Of the 198 such patients seen during the five-year period from 1949 to 1953, 36 patients returned for study. In addition we were able to restudy four patients who had nickel dermatitis prior to 1949. These 40 patients, of whom 36 were women and 4 men, were subjected to dermatological examination and retesting with 10% nickel sulfate solution. Ten patients were also tested with 5% and 2% nickel sulfate solution and with nickel coins. In addition, patch tests were performed with 0.5% potassium dichromate, 5% cupricsulfate, and 2% cobaltous sulfate solutions. Patients who had previously had positive patch tests to substances other than nickel sulfate were retested with the reaction-eliciting substances. Furthermore, a record was made for each patient, noting, first, the areas of previous nickel dermatitis and of any current involvement and, second, any attempts the patient had made to avoid contact with nickel. In addition, the effect of sweating on the nickel dermatitis was noted.

Results

One of the most significant results of this study is illustrated in table 1, which reveals that 36 of the 40 patients (or 90%) retained their allergic sensitivity to nickel sulfate for periods of from 2 to 17 years. These 36 patients reacted as strongly to 10% nickel sulfate solution in 1955 as they had at the time of the previous tests. It should also be noted that the six patients who had the disease at the earliest times (1938 to 1949) before the present follow-up all retained their sensitivity to nickel. The four patients who apparently had lost their sensitivity to nickel had been seen in the 1950 to 1953 period.

The 36 follow-up patients who retained their sensitivity to nickel sulfate reacted just as strongly to the 10% nickel sulfate solution whether or not they had a presenting nickel dermatitis at the time of the follow-up study (see table 2). Five patients without presenting nickel dermatitis but who had had an apparent recent episode and five patients free from nickel dermatitis for at least six months prior to reexamination all showed strongly positive patch test reactions to 10% nickel sulfate. It should be noted that the five patients who had no nickel dermatitis for at least six months prior to reexamination and who made every effort to avoid contact with nickel nevertheless retained their sensitivity to nickel sulfate.

Many of the patients sensitive to nickel reacted rather violently to 10% nickel sulfate solution. Some developed large areas of erythema, papulation, and vesiculation and were quite uncomfortable. Ten of these patients were retested with 5% nickel sulfate and 2% nickel sulfate. In all these patients 5% nickel sulfate showed a strongly positive reaction. Two of the patients had negative reactions with 2% nickel sulfate.

Ten patients were patch tested with nickel coins. The coins were covered in the usual patch test fashion and left in place for 48 hours. All these patients developed erythema, edema, and fine vesiculation and all complained of rather severe itching. This was in contrast to effects of a control metal disk containing no nickel that sometimes gave nonspecific pressure effects, especially at the rim of the disk, and sometimes caused some miliaria-like lesions without itching. It must be remembered that during World War II the "wartime" nickel did not contain any nickel but was made of silver, copper, and manganese. Patch testing with such nickels, of course, would have no significance as far as sensitivity to nickel is concerned. The authority to mint the "wartime" five-cent coins terminated Dec. 31, 1945.[2] The metal content and the gross weight of a five-cent coin

TABLE 2.—*Relationship of Presence of Nickel Dermatitis to Persistence of Sensitivity to Nickel*

Condition of Patient	No. of Patients	Reaction to Patch Test with 10% Nickel Sulfate Solution, 1938 to 1953	Reaction to Patch Test with 10% Nickel Sulfate Solution, 1955
Nickel dermatitis present at time of follow-up	26	Strongly positive	Strongly positive
No nickel dermatitis present at time of follow-up, but patient had had dermatitis within six mo. prior to reexamination	5	Strongly positive	Strongly positive
No nickel dermatitis for at least six prior mo.	5	Strongly positive	Strongly positive

as now issued are copper, 57.87 grains; nickel, 19.29 grains; and gross weight, 77.16 grains. Thus, the nickel coin contains approximately 25% nickel.

All the patients sensitive to nickel were tested for reaction to 0.5% potassium dichromate, 5% copper sulfate, and 2% cobaltous sulfate solutions. In view of the fact that there are reports in the literature of frequent cross reactions of nickel with these substances, it should be noted that none of our patients showed any positive reactions with dichromate or cupricsulfate. Only two of these patients reacted to cobaltous sulfate.

The coincident sensitivities discovered in the patients (table 3) originally had been ascertained by testing with our routine screening tray, which contains 2% solution of paraphenylenediamine in petrolatum; 25% solution of turpentine in olive oil; 1: 1,000 solution of mercury bichloride; pyrethrum powder, as is; 5% solution of nickel sulfate; 5% formaldehyde solution; 5% solution of quinine sulfate; 5% solution of ethyl aminobenzoate

TABLE 3.—*Coincidental Sensitivities in Forty Patients Sensitive to Nickel*

Substance	1938 to 1953	1955	Comment
Paraphenylenediamine	2	2	Both patients had had positive reactions to paraphenylenediamine in 1953
Ethyl aminobenzoate	1	2	One had had negative reaction in 1951; one had had positive reaction in 1952
Mercury bichloride	2	2	One had been sensitive in 1951 and 1 in 1952
Resorcinol	0	1	Patient had had negative reaction in 1951

in petrolatum; 1% solution of resorcinol; 0.5% solution of potassium dichromate; 2% solution of ammonium fluoride; 1% solution of cupricsulfate; 50% solution of potassium iodide in petrolatum; linseed oil, as is; 5% solution of chlorophenothane in acetone; 10% solution of sodium arsenate; and butyl aminobenzoate and trinitrophenol (Butesin picrate), 5% ointment. It should be noted that, while two of these patients had acquired new sensitivities, in no instance did the patients lose their sensitivity to any of the other substances to which they had previously had positive reactions.

Table 4 gives the location and the nickel object that caused dermatitis in our 40 follow-up patients. In many patients multiple areas were involved. The fact that 32 of 36 women patients who were sensitive had dermatitis on the ear lobe shows how frequently sensitivity to nickel is manifested in this area. In women we have come to look upon dermatitis of the ear lobe as almost a cardinal sign of sensitivity to nickel. The next most common location of nickel dermatitis in this group of patients was the thighs, 18 showing involvement in this area. Sixteen of the patients had dermatitis of the hands in which metallic nickel was implicated. Indeed study of table 4 reveals that almost any area of the skin may be involved with nickel dermatitis.

Many of the patients learned to avoid the nickel objects that caused their dermatitis. Those women who could afford it substituted gold or platinum earrings for the costume type. Others coated offending earrings with clear nail lacquer and could thus wear the earrings for several hours without appearance of symptoms. Some used adhesive or cellophane tape to cover a nickel object. Pearl clasps were sometimes substituted for metal clasps. Foam rubber covered with cotton flannel protected two women from nickel garter clasps. One woman silver-plated the metal parts of all her undergarments. Substitution of plastic for metallic knitting needles and of plastic bobby pins for the metallic variety was instrumental in clearing several cases of nickel dermatitis. Plastic sleeves and plastic covers for eyeglass frames and nickel handles protected several patients from exposure to nickel. Cellophane tape applied to fountain pens and metal desks protected one patient. Two patients found that talcum powder dusted under metallic objects worn next to the skin protected them for several hours. Some patients found that the avoidance of pressure prevented nickel objects from causing nickel dermatitis. Wearing nickel objects so that they touched the skin only very lightly often prevented the dermatitis. Some patients remarked that after they had lost weight they could tolerate nickel objects. Two patients found that nickel dermatitis of the thighs could be prevented if they did not cross their legs and thus avoided pressure on garter clasps.

Practically all the patients reported that their nickel dermatitis was worse in the summertime. Five women stated that when they were perspiring freely their costume jewelry would cause an itching, prickling sensation within 15 to 20 minutes and an eruption would appear in about an hour. These same individuals could wear nickel-plated earrings for several hours in the wintertime without any symptoms. The use of talcum powder as a temporary preventive of nickel dermatitis may act in one of two ways. First, it may act as a mechanical barrier to contact of nickel with the skin, and, secondly, it may absorb perspiration, which dissolves some of the nickel from the metal object. During the summer of 1955, which was extremely hot in New York, many of our patients had miliaria. However, the patients sensitive to nickel did not seem to suffer any more from miliaria than the control patients.

Four of the 40 follow-up patients who were sensitive to nickel had a mild atopic dermatitis at the time of testing with nickel sulfate. All four reacted in a similar fashion as did the patients with nonatopic conditions—with

TABLE 4.—*Clinical Aspects of Nickel Dermatitis in Forty Follow-Up Patients*

Location	Nickel Source Causing Dermatitis	No. of Patients
Ear lobes	Earrings	32
Thighs	Garter clasps, metal chairs	18
Fingers	Thimbles, crochet and knitting needles, scissors, nickel coins, cover of fountain pen	8
Palms	Handles of car doors, baby carriage, umbrella, refrigerator, and handbags	8
Neck	Clasp of necklace, zipper	6
Wrists	Watch band, bracelet	6
Breast	Wire support of brassiere cup	3
Antecubital area	Handbags	3
Sides of face	Bobby pins	1
Back of ears	Spectacle frames	1
Sides of nose	Nickel coin (patient had rubbing habit)	1
Eyelids	Eyelash curler	1
Axilla	Zipper	1
Pubic area	Safety pin	1
Dorsum of foot	Eyelets of shoe	1
Plantar aspect of foot	Metal arch support	1
Lips	Bobby pins held in mouth	1

erythema, papules, vesicles, and pruritus. The acute eczematous reaction may possibly have masked the papular, pustular response to nickel that is sometimes observed in patients with atopic dermatitis. However, the patients with atopic dermatitis reacted to patch tests with nickel sulfate in a manner identical to that of individuals with nonatopic conditions. One patient with atopic dermatitis had antecubital nickel dermatitis indistinguishable

from her atopic dermatitis. The antecubital dermatitis cleared rapidly when she wore a handbag so that its metal handle was no longer in the bend of her elbow.

Comment

Persistence or Loss of Sensitivity.—As Sulzberger and Baer [3] point out, the question of persistence or loss of allergic eczematous sensitivity is of the utmost practical and medicolegal importance. There is a marked difference of opinion with regard to the persistence of sensitivity to nickel. Morgan [4] reported the loss of this sensitivity in 43% of a group of patients after periods of from 1½ to 11 years. On the other hand, Nielsen and Bang [5] found that only 18% of their patients lost their sensitivity to nickel after periods of from 14 to 19 years. In our series, 10% of the patients apparently lost their sensitivity to nickel over a period of from 2 to 17 years. We believe it significant that the four patients whom Morgan reported as having been sensitive to nickel sulfate in 1940, and who had the longest follow-up periods, were still sensitive to nickel sulfate 11 years later. In our series, also, the patients with the longest follow-up periods retained their sensitivity to nickel. Of course, it may be a coincidence that the patients followed for the longest periods retained their sensitivity while a few who were under observation for less time had lost this sensitivity. On the other hand, it may be that those patients who have lost their sensitivity have done so only temporarily and that at some future date they may regain this sensitivity. We hope to be able to restudy those patients who have apparently lost their sensitivity to ascertain whether this loss is temporary or permanent.

However, the consensus is that the apparent continuation of or lack of exposure appears to have no effect on whether sensitivity persists or is lost. However, since nickel is so ubiquitous, one can never be sure that the patient has not been exposed. Sulzberger and Baer [3b] make the interesting speculation that, once allergic sensitivity has been established, the as yet completely undiscovered nonspecific x-factor that determines susceptibility to sensitization is of greater importance than exposure to the specific allergen.

Relationship of Sensitivities to Nickel to Those from Other Metals.—As a rule, the metallic nickel encountered by the general public is nickel alloyed with iron, brass, bronze, aluminum, molybdenum, cobalt, titanium, and gold. It is generally agreed that nickel itself has proved to be a relatively common and potent sensitizer, whereas these other metals rarely sensitize. However, there is not universal agreement as to the relationship of sensitivities to nickel to sensitivities to other metals.

Hilt,[6] has stated that observations of cross sensitization in a person between chromium and nickel seem to indicate hypersensitivity to a chemical family. Rostenberg and Perkins [7] felt that, in a patient of theirs who was sensitive to nickel, a sensitivity to cobalt was in the nature of a cross reaction, whereas his sensitivity to gold was an independent or coincidental sensitization. Rostenberg and Perkins also cite various case reports from the literature in which 12 individuals were sensitive to both nickel and cobalt and point out that it is important to realize that all commercial nickel contains some amount of cobalt as a contaminant, because it is not possible to separate these metals completely at a cost compatible with the ordinary commercial uses of nickel. Gaul [8] cited eight patients who were sensitive to chromate and who were also sensitive to nickel and other metals. Orentreich [9] stated that, in a series of over 100 patients who were sensitive to nickel, he obtained only one definite positive reaction to cobalt.

As previously stated, none of our 40 patients who were sensitive to nickel reacted to 0.5% potassium dichromate or 5% copper sulfate solutions. Only two of these patients reacted to cobalt. In other words our patients showed a rather consistent specificity and cross reacted only rarely to any other metal. We are at a loss to explain the difference of our results from those reported in the literature. In addition to testing our patients who were sensitive to nickel with 2% cobaltous sulfate that was certified to be free from nickel, we tested 10 of these patients with pure nickel-free cobalt metallic powder. All these tests were negative. Furthermore, two patients who were sensitive to cobalt were tested with 10% nickel sulfate solution. Neither of these patients was sensitive to nickel.

Optimum Concentration of Nickel Sulfate for Skin Testing.— We found that using the standard 10% nickel sulfate solution gave rather severe reactions in the sensitive patients. Some patients were made acutely uncomfortable by an intensely pruritic patch test reaction. Sometimes the area of the erythema, induration, and vesiculation became almost palm sized. We found that 5% nickel sulfate solution was of sufficient concentration to indicate sensitivity to nickel. Sulzberger [10] stated that 2 to 5% nickel sulfate solution caused no reaction in normal skin and that this concentration will not cause positive eczematous responses unless there is a true sensitivity to nickel. This statement was borne out by testing 10 of our patients who were sensitive to nickel and 10 control patients with 5% nickel sulfate. All 10 of the sensitive patients reacted strongly to 5% nickel sulfate. Eight reacted moderately to 2% and even 1% nickel sulfate solution, not only with positive patch test reactions but with flares at the site of previous manifestations of nickel dermatitis. However, of these 10 patients, 2 patients reacted so mildly to 2% nickel sulfate solution that one could not be certain of the reaction. This impression tends to bear out that of Loewenthal,[11] who states that in sensitivity to nickel the skin appears to react to nickel sulfate in a dilution of 2 or 5% but to no weaker solution. Gaul [8] on the other hand, stated that the use of 1% aqueous nickel chloride solution, and even a concentration of 0.1%, would be adequate to detect sensitivity to nickel. From our findings, however, we would recommend the use of 5% nickel sulfate solution for the routine detection of nickel sensitivity.

Role of Nickel Coins in Testing and in Clinical Dermatitis.—Morgan [4] in England found that eight patients with positive reactions to nickel sulfate reacted "severely" to simultaneous patch testing with English "silver" coins that contained an alloy of cupronickel. Similarly, 10 of our patients who were sensitive to nickel showed a true allergic eczematous reaction to contact with American nickel coins, which are also essentially a cupronickel alloy. We found that patch testing with nickel coins is a

reliable method of ascertaining sensitivity to nickel providing that World War II nickels are not used and that nonspecific pressure effects and papular, pustular reactions are not confused with true allergic eczematous reactions. We agree with Gaul [8] that testing with coins often results in inflammatory "spot" reactions due to irregularity and spurs, especially those along the borders of the coins. In addition, one must not confuse follicular, miliaria-like reactions to the nickel coins. The true allergic eczematous reaction to the nickel coin is invariably accompanied by itching, erythema, papules, and small vesicles. Patch testing with nickel coins, however, not only is a convenient and reliable method of detecting sensitivity to nickel but is also of considerable educational value to the patient.

Morgan [4] feels that contact with nickel coins may be the mechanism whereby sensitivity to nickel is kept active. Urbach [12] mentions patients who continue to have lesions of the hands as long as the hands are placed in pockets that previously contained coins. Two of our patients had developed an eruption from contact with nickel coins. One of these had a dermatitis of the finger tips caused by contact with the coins while held by the fingers with gloves on. Another had developed the habit of rubbing the sides of her nose with a nickel coin. In this area, she had developed an eruption that had been treated for some time as a seborrheic dermatitis. This patient also had a dry, scaly dermatitis of the lateral surface of the left thumb and index finger where she had held the nickel coin. The dermatitis of both the sides of the nose and the fingers cleared promptly when contact with nickel coins was avoided. In none of the other cases of dermatitis of the hand in patients who were sensitive to nickel could we implicate nickel coins. In general, the "usual" handling of nickel coins apparently does not give sufficient contact for development of nickel dermatitis.

Summary and Conclusions

In patients we have treated, metallic nickel is a very common cause of allergic contact eczematous dermatitis and may occur on almost any skin area. Commonest locations are the ear lobes, thighs, hands, and wrists. The patients have successfully used various methods of covering nickel objects or avoiding contact with them. Forty patients who were sensitive to nickel were retested from 2 to 17 years after their original attendance at our clinic for nickel dermatitis; 90% retained their sensitivity to nickel, including those patients with follow-up periods of as long as 17 years, and 10% had lost their sensitivity during a follow-up period of 2 to 5 years. Continued exposure or no apparent exposure to nickel appeared to have no effect on the persistence of their sensitivity. No cross reactions to potassium dichromate or copper sulfate were noted in our patients. Two of these patients also reacted to cobalt, while two other patients who were not from this group of 40 and who were sensitive to cobalt did not react to nickel. A 5% nickel sulfate solution is recommended for routine testing for sensitivity to nickel. Nickel coins minted prior to World War II or after Dec. 31, 1945, may be used for detection of sensitivity to nickel through patch testing. Nickel-containing coins apparently only infrequently cause nickel dermatitis.

45-14 48th St., Woodside, Long Island, N. Y. (Dr. Fisher).

1. The Romance of Nickel, New York, International Nickel Company, Inc.
2. Facts About United States Money, United States Treasury Department, 1954, p. 2.
3. (*a*) Editorial comment, in Year Book of Dermatology and Syphilology, 1953-1954, edited by M. B. Sulzberger and R. L. Baer, Chicago, the Year Book Publishers, Inc., p. 356. (*b*) Editorial comment, in Year Book of Dermatology and Syphilology, 1954-1955, edited by M. B. Sulzberger and R. L. Baer, Chicago, the Year Book Publishers, Inc., p. 129.
4. Morgan, J. K.: Observations on Persistence of Skin Sensitivity with Reference to Nickel Eczema, Brit. J. Dermat. **65**: 84-94 (March) 1953.
5. Nielsen, J. P., and Bang, K.: On the Persistence of Acquired Hypersensitivity, Illustrated by Re-Examination and Repetition of Standardized Patch Tests on Eczematous Patients, Acta dermat.-venereol. **34**: 110-117, 1954.
6. Hilt, G.: Hexavalent Chromate Dermatitis in the Group of Eczematous Dermatitis Caused by Sensitization to Metals, Dermatologica **109**: 143-174 (Sept.) 1954.
7. Rostenberg, A., Jr., and Perkins, A. J.: Nickel and Cobalt Dermatitis, J. Allergy **22**: 466-474 (Sept.) 1951.
8. Gaul, L. E.: Incidence of Sensitivity to Chromium, Nickel, Gold, Silver and Copper Compared to Reactions to Their Aqueous Salts Including Cobalt Sulfate, Ann. Allergy **12**: 429-444 (July-Aug.) 1954.
9. Orentreich, N.: Personal communication to the authors.
10. Sulzberger, M. B.: Dermatitis Eczematosa (Contact Type) Due to Nickel, Society Transactions, Arch. Dermat. & Syph. **41**: 815 (April) 1940.
11. Loewenthal, L. J. A.: Eczemas: A Symposium by Ten Authors, Baltimore, Williams & Wilkins Company, 1954, p. 37.
12. Urbach, E., and Gottlieb, P. M.: Allergy, ed. 2, New York, Grune & Stratton, Inc., 1946, p. 405.

CLINICAL NOTES

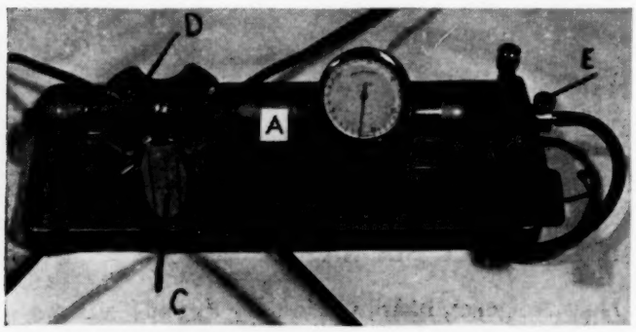
NEW APPARATUS FOR TREATMENT OF PULMONARY EDEMA

Hans Seligman, M.D., Groton, N. Y.

The treatment of pulmonary edema has become fairly standardized. Sedation, bloodless phlebotomy with tourniquets or blood pressure cuffs, administration of oxygen and mercurial diuretics, and/or rapid digitalization are the measures most commonly employed. Bloodless phlebotomy may be used in all cases of pulmonary edema, except for some instances of high output failure. All other forms of treatment have to be varied according to the needs of each patient. The beneficial results of bloodless phlebotomy have been recognized by the medical profession for a great many years. In spite of this, however, there has been no practical and at the same time exact method of performing it, so that it is generally used as a last rather than a first resort. Undoubtedly, a great many lives might have been saved in the past had this form of treatment been used promptly and efficiently. Actual phlebotomy or bloodletting is rarely indicated, except for the occasional patient with polycythemia vera. In the majority of patients it is contraindicated and may be dangerous, particularly because it is not immediately reversible.

Bloodless phlebotomy, the temporary trapping of up to 800 ml. of blood in three extremities, is performed in two ways. Tourniquets are applied to three of the four extremities, and once every 15 minutes one tourniquet is released and applied to the limb that had been free. The pressure of each tourniquet should be at the diastolic or just below the diastolic blood pressure, so that the arterial flow into the extremities is not impeded and only

the venous return is blocked off. The great disadvantages of the tourniquet method are obvious. Every 15 minutes the patient has to be disturbed for changing of one tourniquet. This is particularly a handicap if the patient is in an oxygen tent. The pressure exerted by each tourniquet cannot be gauged accurately. If it is too high it will increase the circulatory disturbance, and if it is too low it will be useless. Furthermore, there is always the possibility of inducing local vascular damage if a tourniquet should be left in place too long under too much pressure, particularly if the vessels have been damaged by atherosclerosis or other vascular disease. The use of tourniquets may lead, and has led, to major vascular occlusions with subsequent amputations. In spite of all these disadvantages, tourniquets in rotation is the method most commonly used today, because it is more practical than the use of three blood pressure cuffs. Applying blood pressure cuffs with manometers instead of tourniquets is a definitely superior method. The pressure applied to each limb can be measured and maintained accurately at its most effective level. Furthermore, the pressure is applied over a wide area so that the danger of thrombosis



New unit for bloodless phlebotomy. *A*, carbon dioxide tank; *B*, lever for regulation of gas outflow; *C*, main valve from which gas is distributed into three blood pressure cuffs; *D*, knob used to inflate three cuffs simultaneously in rotation, with window indicating cuff that is not inflated; and *E*, valve for control of pressure in cuffs.

is minimized. However, application of three sphygmomanometers (inflating them to the proper level and having to watch three dials all the time) is so cumbersome and impractical that this method in spite of its obvious advantages has largely been abandoned. I have lost one patient with pulmonary edema while trying to find enough sphygmomanometers to employ this method.

In order to make bloodless phlebotomy a practical and accurate method of treatment, I have developed a new apparatus. This apparatus consists of one small, compact unit that can be placed anywhere beside the patient. This unit is connected to four blood pressure cuffs, one on each limb of the patient. Once the cuffs are in place, the patient does not need to be disturbed anymore for inflation or deflation of individual cuffs. Depression of a lever on the unit causes three cuffs to be inflated simultaneously, while the fourth cuff remains empty. The pressure in the three cuffs is equal and can be read on the manometer attached to the new apparatus. After maintaining the desired pressure for approximately 15 minutes, the main valve of the unit has to be turned one-fourth turn, which automatically deflates one cuff and connects the unit to the cuff that had been empty. The pressure in the cuffs then has to be brought up to the previous level. By rotating the main valve every 15 minutes and by maintaining adequate pressure, treatment may be continued indefinitely and accurately, with no disturbance to the patient and with a minimum of nursing care. The cuffs belonging to the unit are of a simple snap-on type so that they can be attached quickly. Two extra-length cuffs are provided for the thighs.

The unit itself consists chiefly of a source of power, a manometer, and a main valve (figure). The power is supplied by a small carbon dioxide tank that is 12 in. long and 2 in. in diameter. A lever connected to the tank regulates the outflow of gas into the main distributing valve. The gas fed into the main valve is distributed into three of the four blood pressure cuffs. A flat knob on top of this valve is employed to inflate three cuffs simultaneously in rotation. This knob has a window clearly showing which one of the cuffs is not inflated. This is important if, for example, a medicament is to be given intravenously and one wants to know which limb can be used. It also enables the physician to set the apparatus on, for example, "left arm empty" if he wants to inject into a left antecubital vein. Directly attached to the carbon dioxide tank is a small valve, not unlike the valve on a blood pressure pump. This valve may be opened if the pressure in the cuffs accidentally has been raised too high, or it may be used for gradual decrease in cuff pressures at termination of treatment.

It has been conservatively estimated that the small carbon dioxide cylinder permits at least 1,200 rotations of the main distributing valve, which, if the valve is rotated every 15 minutes, equals 300 hours (or more than 12 days and nights) of treatment. Then as the small tank becomes exhausted, which can be determined by the loss of weight of the unit, it may be refilled anywhere in the United States at a cost of approximately one dollar. It is not within the scope of this short paper to give a more detailed description of and operating instructions for the new apparatus, but it may be stated that the operation and maintenance of this unit is extremely simple.

Summary

Bloodless phlebotomy is a universally accepted treatment method for pulmonary edema. A new apparatus makes this treatment an exact and practical therapeutic measure.

164-166 Main St.

Esophageal Varices.—Resection of the lower esophagus and the reestablishment of intestinal continuity with a plastic tube is suggested as a means of treating bleeding esophageal varices. Of five patients subjected to the procedure, the first two died during the early postoperative period, and the other three were alive 13, 10, and 9 months, respectively, after their operation. The experience gained from these cases suggests that cirrhotic patients with badly diseased livers can withstand the operative procedure if complications do not occur. Two of these five patients were considered unacceptable for venous shunts. The attractiveness of the procedure lies in the technical ease with which it may be accomplished, the relatively short operating time required, and the light plane of anesthesia that is permissible. Furthermore, it removes the pathological area which precipitates or causes the death of most of these patients. The utilization of the procedure might be restricted if the technical complication of fistula formation cannot be reduced and if gastric varices develop in place of the resected esophageal varices.—M. M. Nachlas, M.D., Treatment of Bleeding Esophageal Varices by Resection of the Lower Esophagus, *A. M. A. Archives of Surgery*, April, 1956.

MECHANICAL RESPIRATOR FOR NEWBORN INFANTS AND OTHER PATIENTS

PRELIMINARY REPORT

A. Robert Bauer, M.D., Detroit

In spite of the continued appearance of scientific evidence of the potential danger of any form of artificial respiration in the newborn infant, this type of therapy still seems to be used a good deal. One writer described the mechanics [1] that might operate to produce alveolar dilatation when increased pressure is employed to overcome atelectasis. Another author [2] recently showed sections of lung from a newborn infant who had received artificial respiration. There were areas of atelectasis adjacent to dilated alveoli and rupture of dilated terminal bronchioles allowing escape of air into the interstitial tissues, producing a dissecting emphysema; however, the same picture has been seen in babies who had not received any form of artificial respiration. This would imply that this damage could occur as the result of the patient's own efforts to inflate his lungs. In these cases, it is obvious that any measure that is employed to get more air into the lungs would increase the damage, even the use of effective medical stimulation. Another fairly common complication of artificial respiration is the forcing of air into the stomach, causing further embarrassment to respiration.

There have been changes in the methods of artificial respiration, both manual and mechanical, all of which have one common objective; namely, to increase the efficiency of the gaseous exchange and reduce the incidence of trauma to the patient. Whittenberger reviewed this subject,[3] giving a critical appraisal of the methods of manual and mechanical artificial respiration now in use. He called attention to the work of Day and coworkers,[4] who showed that injury to lungs from artificial respiration was due to overdistention "which is related to time as well as pressure exerted." That is, a high pressure may be used for a short time without doing damage. He also brought out the fact that, when pressure is exerted through a face mask, a certain amount of it may be required to move the thoracic walls outward in order to obtain a satisfactory inflation of the lungs. His reference to "compliance" differences was also pertinent to this subject.

I have always felt that the respiratory movements of a newborn infant were too delicate, rapid, and variable to be accurately imitated by any rhythmically operated mechanical apparatus.[5] In addition to this, the multiplicity of chemical factors that enter into the regulation of respiration would make it unlikely that such an apparatus would anticipate the rapidly changing respiratory needs. It is true that the Drinker respirator and other forms of rhythmically operated respirators have been lifesaving in many cases of respiratory failure in newborn infants and poliomyelitis patients, but it is apparent in many cases that the patient tires himself out fighting the action of the machine in attempting to carry out his own feeble efforts.

From the Department of Pediatrics, Henry Ford Hospital.

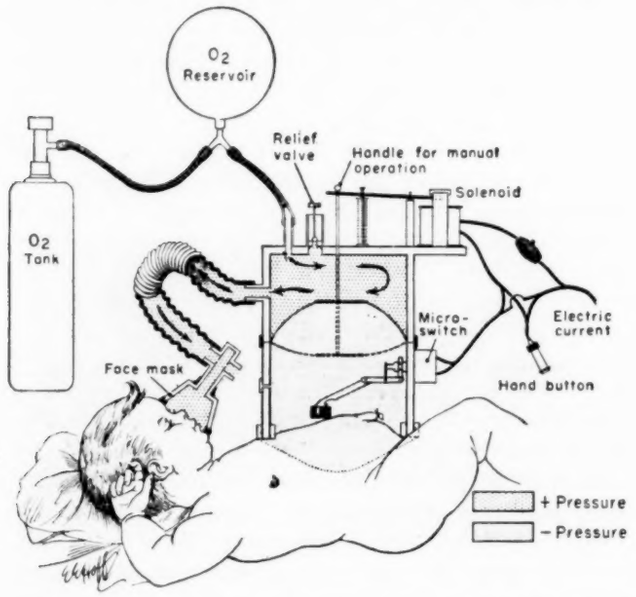
Design of Mechanical Respirator

With all of the foregoing in mind, I attempted to design a mechanical respirator that would retain the desirable features of those now in use and at the same time improve those that are not physiological. Most respirators in use at present employ either positive pressure, with the use of a face mask covering the nose and mouth or intratracheal tubing, or some form of negative pressure applied to the entire body, as in the Drinker respirator, or just over the abdomen with a cuirass. The Bloxom [6] apparatus makes use of a cycling of positive pressure, having the entire infant inside the tank. The principle of the rocking bed [7] uses the infant's relatively heavy viscera to imitate the action of the diaphragm. I felt that, if I could combine the positive pressure over the nose and mouth with a simultaneous negative pressure over the abdomen and lower part of the chest, the resulting inspiration would be more gentle and much more efficient than in the case of either alone. The rationale behind this reasoning is that the negative pressure in the pleural sac exerts its pull against the periphery of the lung and this portion will be the first to expand; the central portion getting the transmitted pull from the intervening tissue will be the last to expand. A positive pressure from above will have the opposite effect of expanding the central portion first. It would seem to follow then, that a combination of the two forces would result in a more even expansion of all portions of the lung with a minimum of trauma. O'Brien and co-workers [8] made use of a similar maneuver in the treatment of poliomyelitis by combining the rocking bed with positive pressure in a tracheotomy tube.

The other important obstacle to overcome was the inherent inability of any apparatus to imitate normal physiological breathing. This important problem might be solved easily by allowing the patient's own inspiratory effort to act as the trigger mechanism to start the inspiratory action of a respirator.[9] The advantages of such a system are quite obvious. The extremely complicated mechanism of a normal inspiration will have been started —the entire respiratory system from the lips and alae nasi down through larynx, trachea, and bronchial tree to the alveoli, the diaphragm, and accessory muscles, as well as all other parts of the body concerned with inspiration, will have been prepared for the entrance of air before the apparatus will deliver any gas into the upper respiratory tract. And once this has been done, no further action of the apparatus will occur until the patient activates it with his own effort. This places the action of the machine completely under the control of the patient's physiological needs and will automatically eliminate the danger of overventilation or underventilation as may occur with machines that are cycled rhythmically at arbitrary speeds. In short, this apparatus will merely supplement the patient's own respiratory effort to make up for any deficiency in his own respiratory excursions. The exception to this latter, of course, is where the patient has no respiratory movement of his own. In this case each respiration is initiated by the operator, who does it by pressing an electric button or manually pulling up on the rod that is connected to the diaphragm of the

apparatus. Here, the amount of ventilation is regulated according to the judgment of the operator, who must, by necessity, watch the patient closely in order to insure airtight application of the abdominal and facial portions of the apparatus and who must be alert to changes in the patient's condition.

The figure shows the apparatus semidiagrammatically. It consists of a body cuirass fitted snugly to the baby's abdomen and lower chest by means of sponge rubber. A rubber diaphragm placed horizontally in the cuirass divides it into an upper and lower portion. This is activated by an electric motor or solenoid, so that when it is pulled away from the patient's abdomen there will be a negative pressure in the lower portion of the cuirass causing an inspiratory movement of the abdomen. The same movement of the diaphragm will cause a positive



Semidiagrammatic drawing of a manually (or electrically) operated resuscitator for newborn infants, which simultaneously combines the features of a negative pressure body cuirass with a positive pressure face mask.

pressure in the upper part of the cuirass, which is connected by rubber tube to a mouth and nose piece. This latter is supplied with a valve that will allow the patient to breathe outside air when there is no positive pressure in the system but will close off the outside air when the positive pressure is operating. The maximum pressure in the upper part of the apparatus is regulated by a relief valve so that it can never exceed 17 in. H_2O. Air, oxygen, or any desired mixture of gases is allowed to enter the system through a one-way valve on the top of the upper portion. A microswitch is placed in the lower portion of the cuirass connected with a lever that rests on the upper part of the abdomen, so that the slightest movement of the abdominal muscles will be sufficient to start the inspiratory excursion. The use of the microswitch and a solenoid should be quite safe from the standpoint of fire. However, it would not be wise to use any electric apparatus in close proximity to explosive gases such as anesthetics in delivery rooms. Under these circumstances, it would be better to operate it manually until such time as it would be safe to use the electricity or move the baby out of the delivery room into the nursery or treatment room.

The experimental model was tested for positive pressure in the upper compartment and for negative pressure in the lower compartment, using electric operation and then repeating the test using manual operation for comparison. Manual operation proved to be more efficient, likely because it was possible to apply more power by hand and get a greater excursion of the movement of the diaphragm. Manual operation gave a positive pressure of 20 cm. H_2O in the upper and 20 cm. of negative pressure in the lower part of the apparatus. Electrical operation gave a positive pressure of 10 cm. H_2O in the upper and 8 cm. negative in the lower part of the apparatus. These pressures can be varied at will by adjusting the relief valve. The amount of air delivered into the face mask varied between 35 and 40 cc., an amount that should be sufficient for the average newborn infant. If less than this amount is needed, the excess will escape through the relief valve.

Comment

Since this apparatus was intended primarily for newborn infants, the model shown in the figure was designed for that size patient. However, it was felt that the principle employed here might also be useful in older patients who were suffering from respiratory failure, notably that which occurs in poliomyelitis or other types of paralysis or weakness. An experimental model was also constructed for this purpose, the chief difference being that the power plant was made as a separate unit that could be placed on a stand near the patient instead of resting on his chest and abdomen. The body cuirass and face mask are connected to it by rubber tubing. The power is supplied by an electric motor rather than a solenoid because the action is much slower and it is not apt to be used near explosive gases.

This paper is presented as a preliminary description of apparatus so that others will have the opportunity of evaluating its usefulness. Previous experience in this field [10] indicates that several years of use in more than one hospital are required to establish the value of any new procedure or apparatus. A study is being planned to obtain sufficient clinical data.

Conclusions

Artificial respiration by mechanical means is still considered necessary in spite of continued evidence of a potential risk in its use. The use of positive pressure over the nose and mouth, combined with a simultaneous negative pressure over the lower chest and abdomen, is suggested as a means of reducing this risk, and I have designed an apparatus to accomplish this in newborn infants. A modification of this apparatus suggests its use in older patients.

19268 Grand River Ave. (23).

1. Wilson, J. L.: Factors Involved in the Production of Alveolar Rupture with Mechanical Aids to Respiration, Pediatrics **13**: 146 (Feb.) 1954.
2. Zuelzer, W. W.: Personal communication to the author.
3. Whittenberger, J. L.: Medical Progress: Resuscitation and Other Uses of Artificial Respiration, New England J. Med. **251**: 775 (Nov. 4) 1954.

4. Day, R.; Goodfellow, A. M.; Apgar, V., and Beck, G. J.: Pressure-Time Relations in the Safe Correction of Atelectasis in Animal Lungs, Pediatrics **10**: 593 (Nov.) 1952.

5. Bauer, A. R.: Respiration in Newborn Infants, Am. J. Dis. Child. **60**: 1342 (Dec.) 1940.

6. Bloxom, A.: Resuscitation of the Newborn Infant: Use of the Positive Pressure Air Lock, J. Pediat. **37**: 311 (Sept.) 1950.

7. Millen, R. S., and Davies, J.: See-Saw Resuscitator for Treatment of Asphyxia in Newborn, Am. J. Obst. & Gynec. **52**: 508 (Sept.) 1946.

8. O'Brien, W. A., III; Scott, A. E.; Crosby, R. C., and Simpson, W. E., Jr.: The Anesthesiologist, the Poliomyelitis Team, and the Respirator, J. A. M. A. **156**: 27 (Sept. 4) 1954.

9. Donald, I., and Lord, J.: Augmented Respiration: Studies in Atelectasis Neonatorum, Lancet **1**: 9 (Jan. 3) 1953. Donald, I.: Augmented Respiration: An Emergency Positive-Pressure Patient-Cycled Respirator, ibid. **1**: 895 (May 1) 1954.

10. Bauer, A. R.: A Combination Resuscitator and Incubator for New-Born Infants, J. A. M. A. **108**: 1874 (May 29) 1937.

UNUSUAL SKIN LESIONS ASSOCIATED WITH THROMBOSIS OF SUBCLAVIAN ARTERY

M. H. Samitz, M.D.

and

Samuel Lisker, M.D., Philadelphia

This clinical report has a threefold purpose: (1) to demonstrate the significance of reactions recorded on the skin as a reflection of changes in other organs, (2) to emphasize the necessity of cooperation among the specialties, in this instance dermatology and peripheral vascular diseases, and (3) to report the results of sympathetic ganglion block in a case of thrombosis of the left subclavian artery.

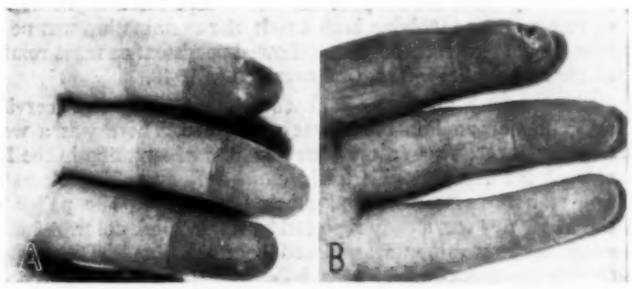
One of the well-recognized tendencies of most specialties has been the rather strict manner in which they have focused their attention on only the very narrow aspects of their individual fields. Our aim should be to overcome this deficiency by developing an integrated approach that embraces the complete health picture of the patient. The skin mirrors the state of the circulation, so that simple observations as to color, state of nutrition, temperature, and hair and nail growth yield a wealth of information to both dermatologist and internist. Unfortunately, all too often the dermatologist fails to examine other structures and the internist begins with the constitutional disease and will examine the skin carefully only when it is known to be involved. Neither the dermatologist nor the internist can discharge his obligation intelligently unless both look a little beyond the confines of their special interests. The following case report depicts this cooperative effort.

Report of a Case

A 53-year-old man was seen on Jan. 7, 1955; he complained of painful finger tips of the index and little fingers of the left hand. About one month previous, while he was doing some cementing, some pieces of cement became adherent to the finger tips of the left hand. He used steel wool to remove the caked cement. A week or so later he began to feel throbbing pains in the finger tips, and he attributed the pains to the steel wool. He also noticed a cracking of the skin on the tips of the index and little fingers. The pain became continuous and kept the patient awake most of the night. The family physician was consulted. A diagnosis of fungous infection was made, and magnesium sulfate (epsom salt) soaks were prescribed. This intensified the pain, and the skin of the involved fingers showed a raw appearance. The tip of the index finger was incised, and some dead tissue was débrided. Penicillin was given intramuscularly and oral therapy with an antibiotic was prescribed. The patient was then referred to a dermatologist, who diagnosed the condition as a bacterial infection. Compresses made from powdered milk and chloramphenicol (Chloromycetin) ointment were prescribed. The patient continued with these topical measures for a week. The condition, however, became worse, and pain was unbearable, especially after the patient had removed his fingers from the solution and the skin had cooled due to the evaporation of the water. Sleep became impossible, in spite of narcotics. The patient subsequently sought the opinion of another dermatologist.

Examination.—On examination, the patient appeared to be in considerable pain; he carried his left hand in front of his body and guarded it with his right hand. The left hand was deeply erythematous, and marked hyperhidrosis of the palmar area was present. The tips of the left index and little fingers were edematous and tender, a cyanotic to a cadaveric color change was present, and the skin showed fissuring and ulceration that appeared almost gangrenous (see figure). The left radial pulse was nearly imperceptible, whereas the right radial pulse was bounding. Blood pressure in the right arm was 130/70 mm. Hg and in the left arm 80/0 mm. Hg. The family history was noncontributory. The patient's medical history included an anterior myocardial infarct in July, 1948, from which he recovered without incident. In July, 1952, he had an episode of congestive heart failure, for which he was hospitalized and digitalis given until 1953. There were no sequelae and no symptoms referable to other organ systems. The patient was a man of excellent social habits, and he smoked 20 cigarettes a day.

The clinical attributes of the skin lesions in association with the absent pulse and altered blood pressure reading of the left extremity pointed to a thrombotic or embolic process. The uni-



A, fingers before institution of therapy (Jan. 7, 1955). *B*, fingers after 14 days of therapy.

lateral picture and the inability to provoke any objective or subjective symptoms in the right hand when this member was treated in the Dermatherm by one of us (M. H. S.) tended to rule out a possible Raynaud's phenomenon. (The thermochamber is a unit designed to provide controlled humidity and controlled temperature from 20 to 150 F.) No attempt was made to expose the involved left hand to these temperature changes because of the damage it might do. It was obvious that the cutaneous lesions reflected an underlying vascular disease, and the patient was referred for immediate consultation to a specialist in peripheral vascular diseases. The following findings were added: The left subclavian artery could not be found, and the left brachial artery was barely perceptible. The left common carotid artery was normal to palpation. Results of an oscillometric examination were as follows: midarm—right, 5.0 at 120 mm.; left, 1.5 at 80 mm.; forearm—right, 4.0 at 90 mm.; left, 0.5 at 80 mm.; and ankle—right, 2.0 at 100 mm.; left, 1.5 at 80 mm. A left cervical sympathetic ganglion block was performed with use of anterior approach. Six cubic centimeters of a 2% solution of procaine hydrochloride was injected. In about five minutes a well-defined Horner's syndrome appeared and sweating in the left half of the face and in the left hand ceased. The pain in the fingers was considerably lessened.

Diagnosis.—The following diagnostic possibilities were considered: (1) embolism from an old mural thrombus in the left ventricle or thrombus in an aneurysm of the left ventricle; (2) scalenus anticus syndrome with compression and thrombosis of the left subclavian artery, with or without a cervical rib; (3) thromboangiitis obliterans; and (4) thrombotic occlusion of the left subclavian artery, probably in the scalene triangle, with

fracture of the thrombus and lodgment of the small emboli in the terminal digital arteries of the index and little fingers. (Necrosis of the digits is extremely rare after thrombosis or embolism in the major arteries of the upper extremity. A case was seen by one of us [S. L.] in which necrosis of several finger tips occurred after embolism in the brachial artery. This followed considerable manipulation of the embolus, which was visible and palpable. Loss of motor power and hyperesthesia is not unusual and is most often temporary. Traumatic situations causing arterial thrombosis may produce Volkmann's ischemic contracture.[1]) Because of the seriousness of the situation, the patient was advised to enter the hospital. He was admitted to the Graduate Hospital of the University of Pennsylvania the next day and remained there for a period of 11 days.

Hospital Studies and Therapy.—Additional studies showed the following results: red blood cells 4,400,000 per cubic millimeter, hemoglobin level 13 gm. per 100 cc., white blood cells 7,800 per cubic millimeter, neutrophils 74%, lymphocytes 31%, monocytes 3%, and eosinophils 2%. Cholesterol level was 150 mg. per 100 cc., cholesterol esters 60 mg. per 100 cc., fasting blood sugar 82 mg. per 100 cc., blood urea nitrogen 22 mg. per 100 cc., and serum uric acid 6.5 mg. and 6.1 mg. per 100 cc. Urinalysis was within normal limits. Serologic reaction for syphilis was negative. (The apparent hyperuricemia was idiopathic. Because of its frequent relation with arterial disease, further determinations were suggested to find whether the levels attained were at the peak or valley of a cycle before therapy with uricosuric drugs.) A chest x-ray revealed slight left ventricular enlargement associated with calcification in the aortic knob consistent with arteriosclerotic cardiovascular disease. The examination otherwise revealed no significant change compared to a study made on May 21, 1953. Except for a slight degree of osteoporosis involving both hands, the examination was negative. Serial electrocardiograms showed persistent changes related to the myocardial infarct that occurred in 1948.

On the day after the patient's admission, another cervical sympathetic ganglion block was performed. There was a well-defined Horner's syndrome with cessation of sweating in the left side of the face, shoulder, and entire left arm. The ulcerated fingers became warmer and much less tender. The pallor of the finger tips was slowly replaced by a faint pink color. A heavy cotton-batting mitten was placed over the hand. Dibenzyline (N-phenoxyisopropyl-N-benzyl-β-chloroethylamine hydrochloride), 10 mg. twice a day, was administered during the period of hospitalization. This adrenolytic drug seemed to prolong the duration of relief. After the second block, the little finger became virtually painless and could be handled without discomfort. Oscillometric examination two days after admission showed: midarm—right, 6.5 at 120 mm.; left, 2.5 at 100 mm.; and forearm—right, 3.5 at 120 mm.; left, 2.0 at 100 mm. There was a definite improvement in the oscillometric indexes, particularly with regard to the pressure at which they were obtained.

Six days after admission another cervical block was done. This was also effective objectively, and at this time the tips of the involved fingers were pink and almost as warm as the others. The little finger was completely healed and painless. The index finger was painless and could be flexed and extended, and the ulcer was healing rapidly. After the patient's discharge from the hospital, a series of seven cervical sympathetic ganglion blocks was performed at five-to-seven-day intervals. Eleven days after the patient's discharge from the hospital, the ulcer on the index finger was completely healed; the patient returned to work and has remained well.

Summary

In a case of thrombosis of the left subclavian artery in association with skin changes of the digits, characteristic skin lesions were pathognomonic and mirrored the underlying vascular disease. Cooperation between the dermatologist and the consultant in peripheral vascular diseases allowed for the correct diagnosis and treatment. A series of cervical sympathetic ganglion blocks in conjunction with Dibenzyline (N-phenoxyisopropyl-N-benzyl-β-chloroethylamine hydrochloride) therapy produced an excellent therapeutic result.

1715 Pine St. (3) (Dr. Samitz).

1. Crystal, D. K.; Burgess, E., and Wangenan, C.: Thrombectomy in Volkman's Contracture, New England J. Med. 247: 1015 (Dec. 25) 1952.

ALOPECIA AREATA DUE TO SYPHILIS

Howard T. Behrman, M.D.
and
S. Theodore Wild, M.D., New York

The decreasing incidence of syphilis in both general and specialized practices has resulted to some extent in a slight forgetfulness of various aspects of the disease. The occurrence of a cutaneous eruption may be dismissed lightly without insistence on a complete general examination, as well as on laboratory studies with special reference to serologic tests for syphilis. This is particularly true when a recognized entity, such as alopecia areata, is the presenting symptom. In former years practically every patient with spotty or patchy loss of hair was subjected routinely to serologic studies. Such tests were performed even though syphilis in true alopecia areata occurred as infrequently as in one out of every hundred patients. However, it is felt that even the infrequent appearance of such a case justifies the insistence on the performance of serologic studies on every patient with loss of hair in patches.

Report of a Case

A 28-year-old South American male student was seen for the first time on July 5, 1955, when he presented himself with the request for a general physical survey, chiefly from the point of view of his progressive hair loss. His symptoms had started about two months previously in his native country, preceding briefly his trip to the United States. Rather abruptly, and without any known antecedent predisposing infection, localized hair loss developed. It first appeared in the occipital region and spread rapidly to other parts of his scalp, resulting eventually in diffuse thinning of his hair and multiple, expanding bald patches. The condition was originally attributed to a fungus infection and later on was treated as alopecia areata on a psychogenic basis, without any benefit. He had no fever or any other significant associated manifestations except recurrent epistaxis, which was found to be due to local causes and which responded promptly to local therapy. His history was entirely negative, and a review of his systemic symptoms offered no important additional data. He admitted to having always been of a rather nervous disposition, but he denied recent emotional stresses or difficulties. He also denied antecedent venereal infection.

Physical Examination.—No physical abnormalities were observed other than the scalp condition, characterized by the presence of several large, well-demarcated areas of alopecia and diffuse thinning of the hair. The hair could be removed from the scalp with the slightest traction. There were no significant skin changes or involvement of any areas other than the scalp. None of the signs of heredosyphilis were noted. Neither local nor general glandular enlargement was evident. The lungs were clear, and the cardiovascular, as well as the central nervous system, survey was normal. There was no suggestion of thyrotoxicosis. The teeth were in good repair and the tonsils not diseased.

Laboratory Findings.—Laboratory tests were negative or within normal limits except for strongly positive serologic tests: Mazzini, 4+ (6 units); Venereal Disease Research Laboratory cardiolipin, 4+ (6 units); Kline exclusion, 4+ (7 units); Rein-Bossak cardiolipin, 4+ (8 units); and cardiolipin complement

fixation, 4+ (24 units). Treponema pallidum immune-adherence and T. pallidum complement fixation tests were positive, which indicated that this patient had or had had a syphilitic infection. A blood cell count revealed a mild anemia without any suggestion of blood dyscrasia. The sedimentation rate was 4 mm. in one hour by the Westergren method. A preparation for L. E. cells was negative. A Wood filter examination of the scalp revealed nothing unusual. Pilometric studies merely confirmed the fact that the slightest traction exerted on the hair, anywhere on the scalp, resulted in easy removal of the hair (almost as though the hair had been "stuck in butter").

Course.—When the patient was informed of the positive serologic findings, he again denied not only venereal infection but even the possibility of exposure. On the other hand, he showed himself very anxious to submit to the suggested standard course of penicillin therapy. This was initiated on Aug. 1 and discontinued on Aug. 19, after the administration of 5,400,000 units of penicillin, when the patient suddenly decided to return to his native country, with the intention of completing treatment under the supervision of his local physician. No significant changes in his scalp condition were noted at the time of his departure.

Signs, Symptoms, and Treatment

The loss of hair in round or oval patches with sharply defined margins is referred to as alopecia areata. In the typical case a small area of alopecia is usually detected

Alopecia areata due to syphilis.

by the patient's barber or hair dresser. The onset is rapid, and there are usually no signs or symptoms other than the loss of hair. The initial area presents a soft, white surface without any signs of inflammation or infection. The course of the disease is rather variable, and the initial circumscribed patch may never enlarge, or several areas may develop simultaneously or at regular intervals on adjacent sites. The areas of alopecia may touch at their borders, but they usually remain individually defined. Occasionally, however, they go on to form extremely large bald areas and in some instances may even eventuate in total alopecia of the scalp. The hairs surrounding the patch are usually normal and are therefore removed with difficulty. However, if the disease is still in the active phase, the hairs at the margin may be removed with very little effort. Furthermore, the marginal hairs often become fragile and shrunken. A section of the hair shaft within the follicle is often atrophic and terminates in a white, pointed bulb. The hair above the surface is considerably broader and gives the hair the appearance of what has been referred to as the "Indian club or exclamation point" type of hair of alopecia areata.

The etiological factors of importance in alopecia areata have long been a subject of controversy. The causative factors, in the order of their importance, have generally been stated to be psychogenic, microbic, and toxic. Many of the case reports in the literature are characterized by the appearance of the recurrent words "worry, fatigue, emotional shock, anxiety, etc." The evidence in support of the theories of a parasitic agent or a toxic origin as related to alopecia areata has many fewer proponents. However, there is some evidence that suggests the possibility of an unknown virus, as well as various bacteria, as the causative agent. From the standpoint of toxicity, there are still occasional reports of improvement of alopecia areata after removal of foci of infection in the teeth, tonsils, and elsewhere in the body.

Syphilis has long been associated with scalp and hair changes. In this particular instance, we are primarily concerned with the changes that appear during the secondary stage of the disease. The usual type of syphilitic alopecia consists merely of a diffuse and general thinning of the hair, which occurs during the third to the sixth month of the disease. Less often, a loss of hair in secondary syphilis takes the form of "moth-eaten alopecia." The patches are usually ragged and ill-defined. However, as in this instance, the patches of hair loss may resemble the larger areas seen in typical alopecia areata. It is usually of value to remember that in syphilis we see merely a thinning of the hair and not a complete baldness of any area. Moreover, in syphilis the patches are more numerous, less circumscribed, and less polished in appearance; they show no exclamation-point hairs, and there is no tendency of the hair to regrow without pigmentation. Of particular interest is the ease with which the hair can be removed in the alopecias of secondary syphilis. As in this instance, attempted pilometric studies were useless because of the fact that the hair could be removed with but the slightest traction. In other words, if a patient is seen with alopecia areata and the hair can be removed with great ease, not only from the margins of the involved sites but from almost any area on the entire scalp, consider syphilis. From a therapeutic standpoint, alopecia areata due to syphilis is comparatively simple to cure. At the present time, adequate therapy with penicillin in doses of approximately 10 million units will suffice to cure both the syphilis and the alopecia.

2 E. 69th St. (21) (Dr. Behrman).

Esophageal Varices.—Varices of the esophagus are well-known sequelae of obstruction to the flow of portal blood, but it is not widely recognized that they may occur when the obstructive lesion is due to metastatic carcinoma in the liver. Reports of a few such cases are to be found in the literature, but there has been no attempt to emphasize this basis for melena and hematemesis. Generally, when patients with disseminated carcinoma show evidence of chronic portal obstruction, constriction of the portal vein by tumor is assumed, and although this is a common finding many of these patients have neoplastic masses in the liver as well. Attention has not been drawn to the role of hepatic metastases in the production of a portal block. For this reason, 4 cases are reported and 6 cases from the literature are discussed in which esophageal varices were the result solely of metastases to the liver.—A. L. Ruprecht, M.D., and T. D. Kinney, M.D., Esophageal Varices Caused by Metastasis of Carcinoma to the Liver, *The American Journal of Digestive Diseases*, April, 1956.

COUNCIL ON FOODS AND NUTRITION

Report to the Council

The following comments have been prepared at the request of the Council.

EUGENE H. STEVENSON, M.S.
Acting Secretary.

CURRENT TRENDS IN THE FEEDING OF INFANTS AND CHILDREN

Clement A. Smith, M.D., Boston

In few other fields of medicine has knowledge of nutrition been applied with such obvious success as in the care of infants and children. The prevention of scurvy and rickets and of the diarrheal diseases of infants has been so complete that their absence among pediatric patients is now largely taken for granted. From beginnings in clinical and laboratory investigation, through active medical and public health crusading, we have adopted dietary practices and standards of food preservation under which these diseases are most unlikely to occur. Deficiency diseases may now be more likely to appear because the established dietary habits of local groups are temporarily disturbed than because any large section of the populace is subsisting at a marginal level. A recent article in THE JOURNAL describes an increasing incidence of scurvy in a southern region where the old custom of giving "pot liquor" (a good source of vitamin C) to babies is being abandoned, but the new custom of feeding fruit and vegetable juices has not been adopted.[1]

Few practicing pediatricians regard alertness against incipient diarrheal disease as part of their daily task of supervising the feeding of babies. The protection afforded by established routines of feeding children and by legal restrictions safeguarding the sources of their foods has tended to replace the conscious activity of the pediatrician or family doctor. Modern safeguards against contamination of milk work so well the year around that the old name "summer complaint" is meaningless to many of today's young mothers. In 1955 even the combined factors of the hottest summer and the worst floods on record failed to alter the prevailing low rate of admissions to Children's Hospital in Boston for infantile diarrhea or vomiting. The reduction of this ancient threat to infants has probably resulted from a number of factors other than pasteurized milk and household refrigeration. It must also reflect improved socioeconomic conditions, public education, and the effects of antibiotic drugs.

With the reduction of the more severe nutritional disorders has also come a general decrease in the number of infants formerly considered to be "feeding problems." Undoubtedly, the conditions of some of the babies once changed from formula to formula and from schedule to schedule under that loose diagnosis are now recognized and treated as examples of chronic infections, pancreatic fibrosis, congenital anomalies, or effects of maternal emotional instability. One wonders how many iatrogenic "feeding problems" of the past are now prevented or minimized by the more flexible and casual feeding practices of today. Although major and minor adjustments of infant feeding still occur, they seem to be far less common and troublesome than they were 25 years ago.

As a result of so much progress, less teaching and research appear to be concentrated upon the nutritional aspects of infant and child health today than in the past. Interesting evidence of the preoccupations of pediatric authorities with subjects other than nutrition is furnished by the transactions of the combined meeting of American, British, and Canadian pediatric societies in June, 1955. Abstracts of all 211 scientific papers submitted for that meeting, including 45 selected for presentation, have recently been published.[2] Slightly more than 5% of those submitted and slightly less than 5% of those selected for reading were papers describing research related to nutrition. The concentration of pediatric interest upon other problems–especially those of child behavior, infectious disease, immunity, cardiac and circulatory abnormalities, and disturbances of neonatal physiology—could signify either that there are no longer any nutritional questions to claim the attention of British, Canadian, or United States pediatricians or that such problems are present but neglected.

Is it possible that there is now no room for improvement in the feeding of children? Certainly the diets of some American children are far from satisfactory. Nutritional factors as yet undiscovered may be responsible for or contribute to diseases now ascribed to other causes. Nevertheless, no known nutritional disturbance among our babies and children today approaches the importance of such problems in the recent past. This is true, however, only for certain fortunate parts of the world. Current publicity about kwashiorkor has made doctors everywhere interested in the common and severe nutritional disorders of children in the tropics and semitropics.

Only two papers related in any way to feeding appeared in the January issue of *Pediatrics*, the official organ of the American Academy of Pediatrics. One of these is a detailed report on infantile malnutrition in Uganda [3]; the other is a shorter communication on nutrition describing the Hospital Infantil de Mexico and its first clinical research team.[4] The *Quarterly Review of Pediatrics,* published in New York City, is now featuring an informative series entitled "Infant Feeding Around the World." [5] The *Journal of Tropical Pediatrics,* a new journal published in London, England, deals to a very large extent with infant feeding. If the American physician is neglecting pediatric nutrition near at hand, he is certainly learning about that of distant countries.

The most striking trend of infant and child feeding in America today may well be the apparent, and potentially hazardous, withdrawal of medical activity from positions consolidated by the successes of past decades. Other trends, perhaps less significant medically than sociologically, might be noted. A period of national prosperity, high agricultural productivity, and relatively full employment has reduced the economic barrier to the availability of good food for our children. A result of these circumstances is that the practice of breast feeding is nowadays

From the Boston Lying-In Hospital and the Department of Pediatrics, Harvard Medical School.

more likely to be directly related to the mother's education and her social consciousness of the fundamental role of the wife and mother than to maternal poverty and ignorance. College graduates now hope to nurse their babies; 25 years ago poorer mothers expected to do so.

The relative plenty available to larger sections of our population today and the technological drives of industry and of marketing are probably related to a trend toward the offering of solid foods in ever-increasing variety to infants at younger ages than in the past. Every physician who takes care of infants is aware of this development,[6] but not all are entirely happy about it. The trend is largely fostered by a maternal belief that, because an infant who takes vegetable purée at four weeks seems more enterprising than one who begins at four months, the former baby's doctor must be more progressive than the latter's.

No compelling evidence of physiological advantage or disadvantage attending the early feeding of solid foods has appeared. One thing seems to have been shown—the infant's digestion and assimilation are much more adaptable than was once thought; but, it is an open question whether we should take advantage of this fact. In an age in which civilization is constantly chipping away at the simple, uncomplicated animal aspects of human life, there seems reason to protest against any hurry to relinquish the natural suction of one warm liquid food in favor of the cultivation of a battery of acquired tastes by the unnatural means of spoon and cup.

Another trend of modern living is toward the increased use of foods specially processed for children. Canned and frozen foods to be opened or melted and served are a growing feature of our technological and free-spending times, and such foods have been made available to meet the growing market for the young infant. What could be more natural to the buyer and the seller than that this arrangement should be expanded not only into very early infancy but also into later infancy and childhood? The resultant "transitional," "chopped," and "junior" foods are familiar to everyone. These foods are certainly suitable for children and convenient for mothers whose time or facilities for preparation of food are limited. On the other hand, a supposed dependence on a special type of prepared food tends to confer upon the child attributes of special delicacy or invalidism or the requirement for overprotection, which do not lead to the easy, relaxed acceptance of life. Members of the American family who require specially prepared cans of food today may be diabetics, cardiac patients, obese men or women on reducing diets, or young infants. Do we want to add our 3 or 4-year-old children to such a list of special diet people?

One other trend deserves comment. The problem of persuading a child to eat was a recurring theme in child care found in outpatient and well-baby clinics in the 1930's. Books were published with such titles as "Cultivating the Child's Appetite."[7] The fact that these were good books is reflected by the disappearance of much of the former compulsiveness about foods and feeding schedules. Part of the change may have been prompted also by the relative scarcities of certain foods, notably meats and fats, during the last world war. In any event, attention seems to be shifting from the problem of making our younger children eat to that of keeping some of our adolescents from eating too much. No one denies that many adolescents eat too little and that more of them eat poor combinations of foods. Adolescent obesity is undeniably common in this period of national prosperity and national concern over the obesity of adults; it should also be a matter of interest to those medically and educationally responsible for children. The recent report by Dr. Bruch tends to support the increasing belief that the obese child and his family may need, and should be able to obtain, more careful medical attention than the mere provision of a reducing diet.[8]

These present trends reflect a situation that could lead to undue complacency among practicing physicians. We may already be placing too much confidence in the self-perpetuation of present practices that were adopted only after years of active educational endeavor. In the absence of sufficient medical and pediatric interest in the nutritional aspects of growth and health, the public will be increasingly advised from other sources—especially the representatives of the food industry. This need not be an unfavorable development. The difficulty is that the claims and exhortations of the less restrained element in the industry tend to be louder and more compelling than the educational advertising of responsible firms, just as the food faddists on the fringes of medicine attract more attention than the conservative physicians. The doctor should expect that he may be asked less often how to feed babies because such information is reaching parents from so many other sources.

It seems unlikely that medical researches into nutrition as related to infancy and childhood might go by default to other agencies. For one thing, few other agencies stand ready to take over the scientific study of nutrition, but there are more positive reasons. The increasing interest in cellular and intracellular metabolism as basic to the understanding of health and disease will keep investigators occupied with aspects of nutrition more fundamental and, perhaps, of more far-reaching importance than those studied in the past.

Many of the trends noted in this survey are related to social and economic factors, which may seem to be blind forces beyond any alteration by science or education. The influence of medical knowledge has been a powerful factor, as shown by its successes in improving the feeding, and thereby the health, of infants and children.

---

1. Woodruff, C.: Infantile Scurvy: Increasing Incidence of Scurvy in the Nashville Area, J. A. M. A., **161**: 448-456 (June 2) 1956.

2. Transactions of the American Pediatric Society, British Paediatric Association, the Society for Pediatric Research, and the Canadian Paediatric Society—Société Canadienne de Pédiatrie, A. M. A. Am. J. Dis. Child. **90**: 491-650 (Nov.) 1955.

3. Dean, R. F. A.: Undernutrition in East Africa: Description of Group for Research in Infantile Malnutrition of Medical Research Council, Mulago Hospital, Kampala, Uganda, Pediatrics **17**: 121-137 (Jan.) 1956.

4. Gomez, F.: Research Program of Hospital Infantil de Mexico, Pediatrics **17**: 138-140 (Jan.) 1956.

5. Bahlquist, B.: Infant Feeding Around the World: Infant Feeding in Sweden, Quart. Rev. Pediat. **10**: 101-103 (May) 1955. Polleri, J. O.: Infant Feeding in Uruguay, ibid. **10**: 146-149 (Aug.) 1955. Ariztia, A.: Infant Feeding in Chile, ibid. **10**: 150-152 (Aug.) 1955. Clements, F. W.: Infant Feeding in Australia, ibid. **10**: 153-156 (Aug.) 1955. Joensen, H. D.: Infant Feeding in Denmark, ibid. **10**: 231-234 (Nov.) 1955. Deem, H., and McGeorge, M.: Infant Feeding in New Zealand, ibid. **10**: 235-239 (Nov.) 1955. Graham, G. G.: Infant Feeding in Peru, ibid. **10**: 240-243 (Nov.) 1955.

6. Butler, A. M., and Wolman, I. J.: Trends in Early Feeding of Supplementary Foods to Infants: Analysis and Discussion of Current Practices in U. S. Based on Nationwide Survey, Quart. Rev. Pediat. **9**: 63-85 (May) 1954.

7. Aldrich, C. A.: Cultivating the Child's Appetite, ed. 2, New York, the Macmillan Company, 1932.

8. Bruch, H.: Fat Children Grown Up, abstracted, A. M. A. Am. J. Dis. Child. **90**: 501 (Nov.) 1955.

THE JOURNAL
OF THE AMERICAN MEDICAL ASSOCIATION
Edited Under the Direction of the Board of Trustees
Editor and Managing Publisher . . AUSTIN SMITH, M.D.
Associate Editor . . . . . JOHNSON F. HAMMOND, M.D.
Editor for Medical Literature Abstracts . GEORGE HALPERIN, M.D.
Assistant Editor . . . . . WAYNE G. BRANDSTADT, M.D.

Subscription price . . Fifteen dollars per annum in advance
Cable Address . . . . . "Medic, Chicago"

CLINICAL LESSONS LEARNED IN THE MORGUE

GUEST EDITORIAL

Paul R. Cannon, M.D.

The recent guest editorial by Isaac Starr, "Potential Values of the Autopsy Today" (*J. A. M. A.* **160:**1144-1145 [March 31] 1956), and the letters in reply (*J. A. M. A.* **161:**175-177 [May 12] 1956) have initiated a controversy of interest to everyone who is seriously concerned about basic problems of present-day and future medicine. It is not surprising that pathologists of experience and distinction should have reacted so promptly and vigorously to the editorial assertions; what is surprising is that some of the assertions should have been made at all. After a careful reading of the editorial, however, it seems evident that the writer had in mind mainly the problem of gross pathological anatomy and the reasons for the seeming decline in interest in this phase of the autopsy. Unfortunately, in my opinion, the writer erred in generalizing from this aspect to such strong assertions as "as the pathological era drew to an end"; "the morgue is swamped with routine work"; "the keenness, audacity, and mental caliber of the personnel performing the autopsies have declined greatly from the levels of the previous generation"; and "what may be called creative imagination is altogether lacking." Such sweeping generalizations would surely be difficult to prove. Indeed, in the letters from such eminent pathologists as Karsner and Klemperer these assertions have been warmly denied. With the latter opinion I heartily agree.

In a controversy of this nature it is obvious that the issues can be clarified not by opinions but only by facts. Assertion of course proves nothing, and little can be gained by arguments based largely on an additional assemblage of opinions. But in the editorial, and solely because of Dr. Starr's opinion that autopsies are not performed as competently as they once were, the suggestion was made that "the type of autopsy performed should change." One suggestion was that "perhaps the autopsies would be better performed by the physicians and surgeons personally interested in the cases, as in the old days." However, because of his use of the word "perhaps," I assume that he did not offer this proposal very seriously. Perhaps, therefore, it might be taken as merely another manifestation of the current vogue of do-it-yourself. On the other hand, his suggestion for a more intensive chemical study of diseased organs is sound and, indeed, represents the aims of modern histochemistry as this aspect of chemistry is being developed by pathologists everywhere. It would be desirable, also, to perform more experiments in the morgue, but, unfortunately, legal and time restrictions, and a not unnatural reluctance to give permission for autopsies for experimental purposes, represent formidable obstacles to such procedures.

With regard to the problem of gross pathological anatomy, it should be apparent to everyone today that the dissection is only a first step in the performance of an autopsy, a step that is both time-consuming and necessarily systematic. There is no particular reason, therefore, why clinicians should feel obliged to participate in this phase of the pathologist's work any more than that they should remain in the operating room during the course of a prolonged operation. The newer lessons being learned in the morgue come largely from microscopic examinations of tissues that have been fixed and stained by modern methods. This is certainly not a casual business; in fact, it demands an increasing expertness on the part of the pathologist; but from it are coming revelations of pathological processes often entirely unsuspected in the gross examination. It is here that the pathologist is widening the boundaries of medical knowledge, and in many directions. To say that little important research is coming from autopsies today is to evidence that one is unaware of one of the great "waves of the present." It is from this histopathological analysis, however, that clinicians are learning about the changing pathological pictures of disease as these are developing under the impacts of modern therapy, with all the complications relating to what we must admit is an increasing amount of iatrogenic disease. Among these complications might be mentioned the lethal lesions induced by transfusions of incompatible or virus-containing blood, those resulting from the excessive use of adrenocortical steroids, and the granulocytopenia, aplastic anemia, and thrombocytopenia associated with drug therapy.

It is unfortunate that the dependence of modern clinicians upon chemical laboratories and instruments of precision has caused some to overlook the dominant role of the morgue in modern medical practice. Nevertheless, there is abundant evidence that the need for the morgue is steadily mounting, with respect to both the formulation of guiding principles of modern therapy and the development of ideas that need to be carried to the laboratory. The autopsy is becoming more important today mainly because we are in such an unusually active period of chemical, hormonal, and isotopic therapy; and the final evaluation of most of these newer forms of treatment must come from postmorten findings. Indeed, one of the most important problems confronting the pathologist today stems from the fact that the autopsy, with increasing frequency, is assuming research proportions, thereby demanding in its performance greater skills and increasing expenditures of time and money.

Chairman, Department of Pathology, University of Chicago.

If there ever was such a thing as a "routine" autopsy, that is certainly no longer the case because of the widening use of the great variety of powerful materials made available by chemical ingenuity. It is not surprising, therefore, that, as the number of therapeutic agents has multiplied, new diseases or at least newly recognized ones have also appeared. Many if not all of these represent newer lessons learned in the morgue.

The list of such pathological processes disclosed in recent years by histopathological analysis of autopsy material is a large and growing one. It includes lipid pneumonia, fibrocystic disease of the pancreas, viral hepatitis, hypervitaminoses, hyperparathyroidism, bone tumors incident to the therapeutic use of radioactive materials (such as radium water and radium chloride injections), diffuse interstitial fibrosis of the lungs, amniotic pulmonary embolism, postpartum pituitary necrosis (Sheehan's disease), diabetic glomerulosclerosis, collagen diseases (disseminated lupus erythematosus, dermatomyositis, polyarteritis, systemic scleroderma), secondary hemochromatosis, myeloid metaplasia, micrococcic enterocolitis, disseminated moniliasis, radiation injury, and radiation nephritis. Only a few years ago the therapeutic use of the elixir of sulfanilamide led to the death of more than 80 persons. Microscopic examinations of the autopsy specimens revealed the renal lesions produced by ingestion of the solvent diethylene glycol and responsible for the renal failure and fatal uremia. More recently the Food and Drug Administration seized more than 2,300 gal. of syrup of urethan after clinical and autopsy studies had demonstrated the hazards to liver and bone marrow from this compound. Modern surgical management of congenital heart lesions would have been difficult if not largely impossible had it not been for the painstaking pathological studies of autopsy material. The consequences of erythroblastosis fetalis and its relationships to the Rh factor were revealed by autopsy studies, as were the causes of perinatal death, the elucidation of which has meant so much in the improvement of obstetric practice.

In these days of intensive hormonal therapy, particularly in the treatment of carcinoma of the prostate and breast, the final therapeutic evaluation depends largely upon postmortem examinations of large numbers of patients who have been treated by such methods as orchiectomy, adrenalectomy, hypophysectomy, and estrogen and androgen therapy. In such studies the pathologist now needs to be both an informed endocrinologist and a histochemist. The development of pathological lesions characteristic of such conditions as potassium deficiency, adrenocortical hyperfunction (Cushing's syndrome), granulocytopenia, activated tuberculosis, spontaneous peritonitis, and perforated peptic ulcer under the influence of intensive steroid therapy is becoming increasingly common. These processes and lesions would not be revealed by a "utilitarian" type of autopsy in which comparatively few if any microscopic sections would be taken and inexpertly examined.

Probably the field of neoplasia represents at present the largest area requiring the evaluation of chemotherapeutic agents. Already the nitrogen mustards, folic acid antagonists, urethan, colchicine, mercaptopurine, busulfan (Myleran), triethylene melamine, radioactive isotopes, and other compounds are being widely tested. The toxic actions of many of these have already been revealed by autopsies, and in some the therapeutic and lethal doses have been found to be uncomfortably close. It is certain that some of the newer drugs to be tested will be toxic and that others will sensitize the recipients, with the later appearance of granulocytopenia, thrombocyptopenia, and aplastic anemia. Some of these compounds no doubt will themselves be carcinogenic, and already there is evidence that ionizing radiation, including possibly radioiodine, now in such general clinical use, may predispose to leukemia. All of these effects will have to be determined ultimately by postmortem analysis.

In this connection it should be pointed out, also, that a modern morgue, in its handling of patients who have been treated with radioactive isotopes, must be equipped much more completely than ever before with protective devices of various sorts. These include Geiger counters, film badges, retention chambers, and availability of health physicists if the pathologists and morgue assistants are to be shielded against the hazards of overexposure to radioactivity. A larger staff will be required, and a staff of increasing expertness, for in no other way will it be possible to ascertain the effects of various radioactive materials upon neoplasms of various kinds and thus to assess their therapeutic potentialities.

Another feature illustrative of the importance of a thorough autopsy, and one that is too little emphasized, is that of its influence upon the acquisition of significant vital statistics. Some years ago H. Gideon Wells stressed this fact in relation to the essential uselessness of all recorded vital statistics on cancer. At that time he pointed out that diagnostic errors, particularly in relation to internal cancers, ranged between 25 and 50% in modern hospitals in Germany, England, and America and concluded that autopsy statistics showed convincingly the complete lack of reliable statistics relative to the frequency of cancer as a cause of death. A similar lack was also evident with respect to the relationship of heredity to such statistics. In short, exact and useful information concerning cancer statistics would be lacking until a very much larger proportion of vital statistics should be dependent upon postmortem examination.

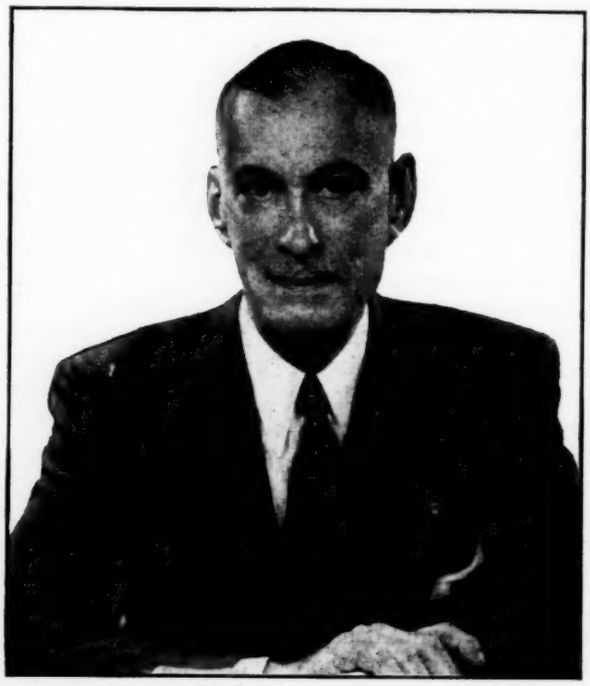
Since then autopsy percentages in this country have risen steadily, but for the United States as a whole it is certainly true that there are far more cases in which people die and autopsy is not done than there are cases in which thorough examination is done post mortem. In fact it is doubtful whether death statistics will be optimally useful until autopsy rates approach the ideal level of 100%. Even then they will have only restricted values if the autopsies are performed perfunctorily as dull and routine procedures designed to yield only information of immediate clinical utility.

In an editorial it is possible to allude to but a few of the many other kinds of problems indicative of the growing importance of the morgue in modern medicine. Additional examples can be readily secured from the files of many departments of pathology, despite Starr's assertion that "if any research of importance is coming from studies made at routine autopsies at present, I am not aware of it." This might be true of a "routine" autopsy, but not of the modern type. Moreover, slide

collections now on file make unusually valuable "baseline" material for comparison with the histological changes induced by newer therapeutic agents. Even weights of adrenal glands are now meaningful in relation to the current use of cortisone and corticotropin.

The morgue is far more than a purely utilitarian place in which the pathologist can answer a few clinical questions of transitory interest. It is, on the other hand, a place where serious students of disease can secure material that may help to minimize clinical error and eliminate or reduce therapeutic failures. In it, however, pathologists can function effectively only when adequately supported. "The pathologist" can no more encompass his daily duties, working by himself, than can "the surgeon" or "the clinician" undertake to perform all the operations or care for all of the patients alone. Autopsies require a large enough group of trained pathologists to make impossible the feeling that the work is a "routine" chore. The cure for such a situation is not to devaluate the autopsy itself but to improve the service. In bringing about this improvement, money has definite therapeutic potentialities.

In conclusion, I would like to make the suggestion that the general subject of the morgue and its relationship to medical theory and practice might well engage the deepening interest of medical school leaders, private foundations, military and other governmental agencies, and, in fact, all students who are seriously concerned with the problems involved in the continuing growth of modern medicine.



DAVID B. ALLMAN, M.D.
PRESIDENT-ELECT OF THE AMERICAN MEDICAL ASSOCIATION

DR. DAVID B. ALLMAN—PRESIDENT-ELECT

At the 105th Annual Meeting of the American Medical Association in Chicago the House of Delegates elected Dr. David Bacharach Allman, a surgeon from Atlantic City, N. J., to be the President-Elect. Born in Philadelphia, July 11, 1891, his family later moved to Atlantic City, where he spent his boyhood and received his elementary and high school education and where he still resides. Dr. Allman graduated from Jefferson Medical College in Philadelphia and became resident physician at the Atlantic City Hospital for one year. He then established his office in Atlantic City, where he has been in practice ever since.

Dr. Allman was surgical director of the Atlantic City Hospital for many years (he resigned in 1955), medical director and vice-chairman of the board of the Betty Bacharach Home for Afflicted Children, consulting surgeon to the Atlantic County Hospital for Tuberculosis, and consulting surgeon to the Atlantic City Hospital for Mental Diseases. New Jersey's governor appointed him a member of the State Board of Medical Examiners in 1947, in which year he was general chairman of the Local Committee on Arrangements for the Centennial Meeting of the American Medical Association, which was held in Atlantic City. Dr. Allman is honorary chief of surgery of the New Jersey State Hospital at Ancora and vice-president of the Society of Surgeons of New Jersey, of the Board of Managers of the New Jersey Soldiers' Home at Vineland, and of the Board of Managers of the Atlantic City Tuberculosis Hospital. He has served two terms as a member of the Board of Trustees of the American Medical Association. As Chairman of the Committee on Legislation of the American Medical Association, Dr. Allman has appeared at public hearings many times before Congressional Committees in Washington, D. C.

Dr. Allman is a past-president of the Jefferson Medical College Alumni Association, of the medical staff of the Atlantic City Hospital, and of the New Jersey Chapter of the Association of Military Surgeons. He is also past-president of the Medical Society of Atlantic County, of the Atlantic County Hospital for Tuberculous Diseases, of the Atlantic City Chapter of the Sojourners, and of the Atlantic City Chapter of the Military Order of the World Wars; past state commander of Military Order of the World Wars; and past vice-commander of the Quincy Gilmore Post 263 American Legion. He is vice-president of the United States Section of the International College of Surgeons; chairman of the Interne Committee, Clyde M. Fish Memorial Hospital, Northfield, N. J.; former chief of the Emergency Medical Services, Coastal Zone 6 of New Jersey; and a former chairman of the Selective Service of New Jersey Board of Appeals No. 10.

Dr. Allman is a member of the World Medical Association, the American Cancer Society, the American Red Cross, the New Jersey Hospital Licensing Board, the Executive Committee of the Jefferson Alumni, the Atlantic County Medical Society, the New York Academy of Sciences, the Atlantic City Country Club, the Brigantine Yacht Club, the Atlantic City Racquet Club, the Reserve Officers of Naval Services, the Naval Order of the U. S., the Reserve Officers Association of the U. S., the U. S. Coast Guard Auxiliary, and the Army and Navy Club; he is an honorary member of the Surgical Academy of Peru. He is a fellow of the American College of Surgeons and a diplomate of the Ameri-

can Board of Surgery. He is also a trustee and chairman of the finance and budget committee of the Medical Society of New Jersey and a member of the American Trudeau Society, the Association of Military Surgeons, the American Association for the Advancement of Science, the Atlantic City and New Jersey Civil Defense Councils, the Medical Club of Philadelphia, the New Jersey Hospital Association, and the American Hospital Association. Dr. Allman is also a fellow of the Philadelphia College of Medicine and a fellow of the Academy of Medicine of New Jersey.

Dr. Allman served in the U. S. Navy throughout World War I, having been assigned to the League Island Navy Yard and later as assistant surgeon to the Gray's Ferry Road Hospital. During World War II he was commissioned as a surgeon in the United States Public Health Service. Among other civic activities, Dr. Allman has been president of the Lions Club and a director of the Linwood Country Club. He is a member of the Elks, Moose, Eagles, Shriners, and Grotto. In addition to his professional and fraternal associations, Dr. Allman is a director of the Guarantee Bank and Trust Company and a vice-president of the Guardian Saving and Loan Association. He was appointed to represent the American Medical Association on a national committee to welcome the French heroine of Indo-China, Nurse Genevieve De-Galard-Terraube, on her visit to the United States on special invitation of Congress.

WALTER L. BIERRING, M.D.
AWARDED DISTINGUISHED SERVICE MEDAL

DR. BIERRING RECEIVES DISTINGUISHED SERVICE MEDAL

At the Annual Meeting of the American Medical Association in Chicago, June 11, the House of Delegates selected Dr. Walter L. Bierring of Des Moines, Iowa, to receive the Distinguished Service medal. Dr. Bierring is a past-president of the American Medical Association, of the Iowa State Medical Society, and of the Johnson County and Polk County medical societies in Iowa. Born in Davenport 88 years ago, he received his M.D. degree at the State University of Iowa College of Medicine, then studied at the University of Heidelberg in Germany, the University of Vienna in Austria, and at the Pasteur Institute in Paris. For 10 years he was professor of pathology and bacteriology and for another 10 years professor of the theory and practice of medicine at the State University of Iowa. He was professor of medicine at Drake University Medical School from 1910 to 1914. He became professor emeritus of the theory and practice of medicine at the University of Iowa College of Medicine in 1946. Dr. Bierring was for 20 years state health officer of Iowa, having resigned only three years ago. He has been president of the Iowa State Board of Medical Examiners and a member of the National Board of Medical Examiners since its origin in 1916; he was president of the National Board for four years. He has been president also of the Alpha Omega Alpha Honorary Medical Society since 1924 and has traveled about the United States to establish various new chapters of that fraternity. He is a member of Phi Beta Kappa and Sigma Nu, was chairman of the American Board of Internal Medicine from 1936 to 1939 and has been secretary and editor of the Federation of State Medical Boards for 41 years.

Before his election to the presidency of the American Medical Association, Dr. Bierring had been a member of the House of Delegates, representing his state medical society for several years. He had been Vice-Chairman and later Chairman of the Section on Medicine and Secretary and later Chairman of the Section on Physiology and Pathology. He is a fellow of and for several years was regent of the American College of Physicians and is a fellow of the American Public Health Association, American Association for the Advancement of Science, Association of American Pathologists and Bacteriologists, and American Heart Association. He is a member of the Association of State and Territorial Health Officers and for two years was president of the Conference of State and Provincial Health Authorities of North America. Dr. Bierring was made an honorary fellow of the Royal Sanitary Institute of Great Britain in 1954. The State University of Iowa in 1954 established the Bierring award in bacteriology. The Iowa Tuberculosis and Health Association in the same year established a Bierring award to be given to a person who has contributed to the control of tuberculosis or other chest diseases in Iowa. The Federation of State Licensing Boards named its annual federation dinner in his honor.

Dr. Bierring received the gold medal and citation accompanying the A. M. A. Distinguished Service medal at the ceremonies in the Civic Opera House in Chicago, June 12, when Dr. Dwight Murray of Napa, Calif., was inaugurated as President of the American Medical Association. Dr. Bierring was chosen for the honor by the American Medical Association in recognition of his achievements in public health and for his experience in medical examining board work.

ORGANIZATION SECTION

ADDRESS OF PRESIDENT ELMER HESS BEFORE THE HOUSE OF DELEGATES

It now is time for me to make my final report to you on my stewardship. Since that eventful night in Atlantic City last June, I have traveled up and down and across these United States, to Puerto Rico and the Hawaiian Islands, and I believe that I know something about you and your problems that I did not know before. They are indeed many and complex. What has our Association accomplished during the past year? What are the problems facing us in the years to come? First, let me make one comment. I am sure that the members of this House rejoice with me in the latest reports concerning President Eisenhower's recovery from his recent illness. The physicians responsible for the President's care—Dr. Howard Snyder, Col. Thomas W. Mattingly, and, of course, Dr. Paul Dudley White—are to be commended for the forthrightness and frankness with which the President's condition was reported to the American people.

Medical Education

I should like to start my report with a few words on medical education. While more and more of our practicing physicians are supporting the American Medical Foundation, there are still a great many who, for one reason or another, do not. Every physician should recognize that his medical education was subsidized by someone, for none of the tuition fees charged were adequate. There is a loyalty to one's medical school, and there should be a loyalty to medical education as a whole. In some states every man is assessed a given sum for this purpose by his state organization. For example, Illinois assesses each member $20 for this purpose. I hope that each delegate of this House will listen intently when Illinois makes its report on this subject at this meeting. I have no comment to make about this, for each state knows its own problem best. However, the support of medical education by the practicing physician is a must if we are going to stimulate industry to annually contribute large sums for this purpose and if we wish to keep government out of the operation of medical schools. It is evident by the contributions already made by industry that it recognizes the need for this support.

As I went around the country this past year, I found some serious differences of opinions between the educators in our schools and the private practicing medical profession. Most of these differences should be ironed out at the local level around the conference table. Many of our teachers, particularly the full-time group, never attend a county medical society meeting. Some are not even members of their county societies. Every attempt should be made to correct this. Our teachers should be active in their county, state, and national organizations and should make their voices heard in our councils. They are just as important and as much a part of organized medicine as any member of the profession.

Read before the 105th Annual Meeting of the American Medical Association, Chicago, June 11, 1956.

For instance, I had a letter from a professor complaining that our Secretary and General Manager, George Lull, had no right to advocate for or against certain legislation. He did not think that his dues should be spent for such purposes, particularly when he did not think the legislation was pertinent to our health problems. He had particular reference to our support of the Bricker amendment. I called his attention to the fact that neither George Lull nor any of our officers acted on his own; they only obeyed the dictates of our House of Delegates. I asked him if he had made his voice heard at his county or state society level, and that if he had not he voted in the affirmative on every policy sent up from the county to the state and from the state associations to the House of Delegates of the American Medical Association. He apologized and admitted that he had never attended his county society meetings. He said he felt his opinion was not wanted by the men in private practice. I wrote him and asked him to attend.

Many of the problems of the faculty and the practicing physician are the result of misunderstanding. There is no better forum at the local level than the county society, and there is not one single controversy between any group in medicine that cannot be solved around the conference table, according to the ethics of the A. M. A. Argue and fight all you please at the meetings—that is our American way, but be reasonable men of good will and do not indulge in personalities. We who are practicing clinical medicine and those who are teaching our young men to go out and practice clinical medicine belong to the same family. If we do not, we should. We in the A. M. A. realize that often the medical educators are badly remunerated for their services. We can help them if we cooperate. We cannot help them if there is a big insurmountable gulf between us, no matter who creates the gulf.

Hospital-Physician Relations

In the realm of hospital-physician relations things seem to have gone from bad to worse during the past year. Lawsuits and threatened lawsuits seem to be the order of the day. I want to say very emphatically that, in my opinion, no matter who wins in such ligation, each group has damaged itself in the public's opinion. The reason for this is simple. The public does not understand what the controversy is all about. Again, it takes good faith on both sides with reasonable men of good will to sit down around a table and solve the physician-hospital differences. This should preferably be done at the local level, and I know that all of the controversies can be adjudicated under our code of ethics. This entire area has to be constantly scrutinized to keep our Association and the American Hospital Association on a mutually cooperative basis. This is a two-way road, and if we do not resolve our differences both groups will lose their identities and be swallowed by government. These high level consultations must continue and eventually produce

results if we are to stay out of the courts and prevent legislation that is only damaging to both groups and to the public.

Two studies of particular interest are to be reported to the House of Delegates at this meeting. One is a review of the functions of the Commission on Accreditation of Hospitals that has been made by a special committee of the House, under the chairmanship of Stover of Boonsville, Ind. I was encouraged to learn that the committee found "that the dissatisfaction with the functions of the Joint Commission, as intense as it is in some localities, is not as widespread geographically as this committee was led to believe. It is also evident that much of the criticism is based on misunderstanding and misinformation." The committee is unanimous in recommending that hospital accreditation be continued, although a number of basic changes in the present program are suggested. It has also clarified and explained the functions of the commission.The other study report is concerned with private practice by the full-time faculty members of medical schools, made by a committee of the Council on Medical Service, under the chairmanship of Dr. Willard Wright of North Dakota. As in the case of hospital accreditation, this committee was faced with a very controversial issue over which, "there are sharp differences of opinion on the matter of private practice between the local profession and the medical school deans." In an effort to "assist medical societies and medical schools in developing programs which will be satisfactory to all concerned—the students, the teachers, and the practicing profession so that in the end the public may receive the best possible care," this committee will set forth some fundamental principles on medical school–physician relations.

The reports of both of these committees are clear and concise; both have faced the issues squarely and resolved these issues as they saw them. I shall not discuss either report at this time, since they are now before the House of Delegates for your consideration. I do, however, urge that you read them carefully and with an open mind.

The Present Administration in Washington

During the past year we have had many conferences with the Secretary of Health, Education, and Welfare, Marion Folsom. Those of us who have had consultations with him have learned to respect his knowledge of an approach to governmental health problems. We have also many, many friends in the House and Senate on both sides of the aisle. We have supported many measures for the improvement of the medical care and services rendered by the government agencies that deal with health problems. We have supported legislation designed to improve the quality of military medical care and the lot of our career medical people in the armed services. We did not think these improvements were as liberal as they could have been, but they will assist in filling career positions and in removing such discriminatory legislation as the "Doctor-Draft" law.

We must maintain the respect of the men of both sides of the aisle in Congress. We must maintain our relationships with our friends in the administration and must continue to make more friends for medicine in Congress and with the administration. Under the leadership of our Washington Office and our Committee on Legislation, these things are being studiously considered and better relationships are the order of the day. We have earned the respect of those in authority, a respect that we must never jeopardize through the expression of a small, petty, or purely selfish viewpoint. We can further improve our position if we will.

American Legion

Now, very briefly, I want to outline developments over the past year and a half in our relations with the American Legion. At this meeting you may be called upon to consider certain points arising from our liaison arrangements with the Legion. At the 1954 Clinical Meeting in Miami, National Commander Seaborn P. Collins addressed this House and suggested a joint Legion-A. M. A. study of veterans' hospital and medical care. Our Board of Trustees then appointed me chairman of a three-man A. M. A. liaison committee to meet with a similar Legion group.

Since early last year the two liaison committees have met several times. We reached agreements on a number of points but were far apart on others. It is hoped that on those subjects where we agree there will be mutual cooperation between the A. M. A. and the Legion. It also is hoped that where we do not agree our disagreement will be on a calm, reasonable basis. The liaison committee, after presenting its report, was discharged by the Board of Trustees, and the issues have been referred to the Committee on Federal Medical Services of the Council on Medical Service. The two liaison committees met in a friendly atmosphere, and I want to pay particular tribute to the cooperative spirit of Mr. Collins and Governor George Craig of Indiana, both past-commanders of the Legion.

Traffic Accidents

Last year there were more than 38,000 fatalities and more than a million Americans severely injured in traffic accidents in the United States. These accidents constitute a medical problem as great as any disease, including heart disease and cancer. This is an appalling situation, particularly since these deaths and injuries usually are preventable. The county society, the state societies, and the American Medical Association should accept the challenge of leadership in the prevention of these conditions. We have accepted the President's invitation to sit in regional meetings with other citizens in an effort to help solve this problem. We should accept our responsibility with alacrity.

Problems of the Aging

One of the great socioeconomic medical problems of our country today is that concerned with the aging. Due to the application of our knowledge gained from scientific medical research, we as physicians are in part responsible for this increase in our huge aging population. Approximately 15 million people today are 65 years of age or over. The next 10 years should add another 5 to 10 million people to this group. We have succeeded in advancing longevity, but we have not solved the most important problem—how to keep these

people healthy, happy, and occupied. Nor have we found ways and means to fully care for them in their declining years medically and economically when they become the victims of the various degenerative diseases that will make many of them our direct responsibility. Why not tackle this job at its source? Why not plan now for ways and means to care for these people both economically and medically? This calls for continuous study and research all along the life line of our people. It does little good to prolong their lives unless these lives can be useful, self-sustaining, and reasonably independent financially. As medical men we have created the problem; it is our duty to solve it by assuming the leadership that is necessary. We now have a committee of the Council on Medical Service concerned with the medical problems of the aging. Perhaps this committee could be used as a nucleus to join with other medical and nonmedical agencies for complete socioeconomic and medical research in this problem.

Mental Health

Mental health is one of our largest and most complex problems. With the cooperation of our Council on Mental Health, the American Psychiatric Association, and many other interested groups, a strong committee has been formed to survey the whole problem in the United States. Most of our mental hospitals are understaffed and overcrowded. The situation has not bettered much during the past year. It is hoped that the federal funds allocated for this survey will produce the desired facts and information that will allow us to plan for a more scientific approach to the whole problem of mental and emotional health in this country. In the meantime it is recommended that we all become interested in this most important problem in our own communities and that we attempt to have set aside a few beds in our local hospitals to care for acute mental cases.

Insurance and Social Security

As we all know prepaid health insurance has had amazing acceptance by the public since its inception only a relatively short time ago. Nevertheless, to avoid interference by the government and others in this successful private activity, we must continue to review medically sponsored and commercial programs to provide the widest possible coverage on a sound actuarial basis.

As you know, the position of the American Medical Association has been one of active opposition to the compulsory inclusion of physicians under the Old Age and Survivors Insurance provisions of the Social Security Act. As far back as 1949, the House of Delegates enunciated this policy and has reiterated it once or twice a year ever since. In 1954 the position was expanded to remove any opposition by the Association to the voluntary inclusion of doctors under the act. Although physicians as a group have repeatedly voted overwhelmingly against compulsory coverage, I know from my travels that many individuals would like to be covered. However, I am afraid that, in the light of the various sweeping amendments being proposed in every election year, this program eventually can bankrupt the economy or make us truly a welfare state. Therefore, we must continue to strive by every means within our power to keep the social security program confined to its original concept.

Activities of the Law Department and Council on Medical Service

During the past year our Law Department has rendered yeoman service to the Association. One of their most important programs has been the arranging of several sectional meetings with the members of the American Bar Association. At these meetings mutual problems have been thoroughly and freely discussed and have been productive of very splendid mutually cooperative results. Another notable conference was a meeting at the national level of the legal representatives of our state and county medical societies. Both an enlarged department and more meetings with the legal profession are increasingly needed.

I must for a moment return to my old love, the Council on Medical Service. It is continually having work piled in its lap, and I hope you all will read the Council's report and really see how much this group and its committees are doing for all of medicine. If its work continues to increase it is going to have to have a larger staff and a correspondingly increased budget.

Medical Society Responsibilities

Since the county unit is the area in which medical authority lies, it becomes increasingly necessary for every physician to take an active part in the affairs of the county society. If you are absent when an important decision is being made, then whether you like it or not you are voting in the affirmative every time your group makes a decision. Since action at the local level is so important, it is urged that a more definite effort be made to stimulate not only attendance at the meetings but also reading of THE JOURNAL. In THE JOURNAL every week there is a summation of all of our activities. It will pay large dividends for us, no matter how busy we are, to keep abreast of our affairs. This journal is not only the best scientific journal in the world but a gold mine of general information. Under the able management and editorial leadership of Dr. Austin Smith it will continue to be the repository of our actions and "must" reading.

Dues

When we compare the dues that we pay with the dues of other organizations, it is noticeable that we get more for our dollar than any group that I know. When we compare the dues with the benefits—well, there is just no comparison. You are demanding more and more work out of your headquarters staff. The demands cost money, and we each contribute a pitiful sum for these necessary expenditures. It is difficult for me to understand the attitude of medical men when it comes to the question of dues. So often I have seen them pay as much as $500 and more initiation fees to join a country club and their annual dues, which run $100 up, without a qualm, but ask them for an increase of $25 a year for dues to do constructive work for all of us and they cry to high heaven. Let us support our Association with our time, but let us also support it with our money. Increased dues are a "must," and I highly recommend it.

Labor

It would be unwise for us to let much time pass without examining the relations between the physicians and the labor movement. I refer to our relations as physicians with the dues-paying, rank-and-file labor members, as well as with those salaried officials who speak for them. Basically, the relations between the physician and the worker are good. They have been good in the past, and they must continue to be good. This demonstrated ability of the physicians and the workers to get along together is an essential factor in the phenomenal growth of group health insurance. Physicians and labor, working together realistically, can bring better medical care to all of the people. Although much of this effort is being put forth on the local and state level, the American Medical Association continues to make its own contributions. Our Council on Industrial Health maintains constant contact with the health problems of labor, and our Council on Medical Service helps to develop improved ways for financing medical care.

Yet, there are troubling signs that we cannot afford to ignore. For example, one of the actions taken at the first AFL-CIO convention last Dec. 5 was the adoption of a resolution stating in part: "We call upon Congress to enact . . . a national health insurance system which would make complete prepaid health protection available to all Americans with contributions geared to income." This resolution might be passed over as a routine restatement of an established association policy, except for what took place a few months later before a Congressional committee. Nelson Cruikshank, head of the AFL-CIO's department of social security, testified as follows:

> Our labor organizations have long advocated a government insurance program for prepaying the costs of hospitalization and medical care on the same general approach followed in Old-Age and Survivors Insurance. Through regular contributions related to earnings, people would then be entitled to have their medical costs paid from the accumulated funds as a matter of right, without a needs test.

Now we know that there is no change in the labor policy of certain labor leaders supporting national compulsory health insurance. Knowing this, it is interesting to hear of organized labor's new grand strategy. Last November, George Meany talked at the dedication in Washington, D. C., of the new national headquarters of a union. Mr. Meany, new president of the AFL-CIO, said: "In pursuing the objectives of the joint AFL-CIO organization coming into being, we expect to use every method legally available to us as citizens. This," and I am still quoting Mr. Meany, "This without question will include political action, not only to defend our movement against legislation destined to destroy us, but also to raise even higher the American standard of life." Now this is the key sentence from Mr. Meany. "The scene of battle," he said, "is no longer the company plant or the picket line. It has moved into the legislative halls of Congress." Does that mean that when the political climate is right, an all-out drive will be launched for national compulsory health insurance? I would not be honest with you if I did not say I thought that is what we must be prepared to face.

It is my personal belief that some of these leaders in the labor movement might be more interested in destroying the two-party political system than they are in protecting the rights of citizens they are supposed to represent. The American union worker is first a citizen. He can think for himself, and he has shown he is not afraid to assert his citizenship.

Into the many new union headquarters established in Washington will flow hundreds of staff experts to reinforce the 1,400 already fighting labor's battles in Washington. If this massive concentration of power is to be thrown into a fight to put over national compulsory health insurance—and we have the word of top AFL-CIO leaders that it will be—we should indeed be concerned. There is a great deal for us to see on the surface. Yet, perhaps we should look a little closer. We should ask ourselves how strong are the foundations of what we see building up against us? How far down the line will our friends in labor's ranks go before opposing a drive for national compulsory health insurance?

There are hopeful signs that a big segment of labor will not blindly follow this leadership. Three of the oldest and strongest, three of the unions that have done the most for the labor movement in this country, are not budging. They have consistently shown that they will have no part of national compulsory health insurance. Three of the unions that have spoken out against national compulsory health insurance, and in support of private medical care, are the United Mine Workers of America, the International Brotherhood of Teamsters, and the United Brotherhood of Carpenters and of Joiners, embracing a total membership of more than 2,600,000; they are long experienced in bargaining for the rights of their members, and they are long experienced in dealing with Congress. For a long time now they have told the national leaders of the AFL and the CIO that they will have nothing to do with national compulsory health insurance.

As long as we can continue to produce good medical care at reasonable cost, as long as we respect the workers' rights in their own fields of organization—as long as we continue to do these two things—I think we will continue to have millions of friends in the ranks of labor regardless of what some of their leaders may try to do.

Legislation

We have been forced to take political action to protect the public's health interests. Therefore, we must as individuals register in the party of our choice. We must as individuals vote at every election. We must as individuals support those candidates in both parties who favor our point of view in health matters and be opposed politically to all those candidates who take the point of view that we believe are not in the best interests of the public's health. I have nothing but praise for our Washington Office and for our legislative committee in their support of this attitude. And I wish to especially compliment the state legislative committees and the Woman's Auxiliary for their constant vigilance toward health legislation in their state legislatures and in Congress.

Finale

I have touched briefly upon some of the highlights of our accomplishments of the past year and my hopes for the future. I could speak for hours on many subjects that I have not even mentioned. Time does not permit me to tell you all of the wonderful experiences that have been mine these last two years. This has really been for me a labor of love. To have been able to serve you and, through you, our government and our people, has been one of the greatest joys in all my experience. I take my place now in the ranks, and that is as it should be. My services, such as they are, are yours to command. If I can still be of use, feel free to call on me. My life is still devoted to this grand profession to which I owe so much and to which so many of us contribute so little. As I retire from this leadership, may I invoke the universal prayer that fits man, regardless of his religious affiliations. I have used it often before; I use it now.

Lord, make me an instrument
of your Peace
Where there is hatred let
me sow love
Where there is injury
pardon
Where there is doubt
faith
Where there is despair
hope
Where there is darkness
light—and
Where there is sadness
Joy.

O Divine Master, grant that I may not so much seek to be consoled as to console, to be understood as to understand; to be loved as to love, for it is in giving that we receive, it is in pardoning that we are pardoned, and it is in dying that we are born to eternal life.

ADDRESS OF PRESIDENT-ELECT DWIGHT H. MURRAY BEFORE HOUSE OF DELEGATES

Some men measure the greatness of the American Medical Association in terms of its physical size. They say that we are a "giant" because our roster lists 157,000 doctors as members. I believe that our association is great for far better reasons—its long and outstanding service in the public interest, its tireless efforts to promote the art and science of medicine, and its constant adherence to the principles of freedom and individual enterprise. Size alone does not make our American Medical Association great; it is the individual contributions by all of you that decide whether we deserve the trust and faith of the people we serve.

It has been an extreme pleasure for me to participate in many state and local society meetings during the past year as President-Elect of the A. M. A. I look forward to the year 1956-1957, and I humbly pledge to work always with you and for you. Together with your help and with divine guidance and assistance we can accomplish more fine things for medicine and for our fellow citizens. Now I would like to talk with you about a few medical issues and a few areas in which perhaps all of us can improve.

Read before the 105th Annual Meeting of the American Medical Association, Chicago, June 11, 1956.

General Practice in Hospitals

During my travels as President-Elect, I have been interviewed many times by representatives of the press. Because I am a general practitioner they frequently ask me about the trend to specialization and the plight of the general practitioner. I usually tell them that, in my opinion, the pendulum has swung the full distance to specialization, and that it now is beginning to return. I do not say we have overspecialized, but I do believe that general practice has been somewhat deemphasized.

You will recall that last year this House of Delegates and its reference committee deliberated many long hours on resolutions pertaining to proper recognition of the general practitioner in the hospital. The action taken by the House of Delegates was as follows:

> Your reference committee is in agreement with the intent of this resolution that the American Medical Association, through its Council on Medical Education and Hospitals, encourage hospital staff rules which permit the general practitioner staff member privileges in the specialty departments in keeping with his merits and demonstrated ability and recommends adoption of this resolution.

The House of Delegates adopted this resolution, and it now is the official policy of the American Medical Association. I am convinced that there is not a general practitioner in the country who would not agree that the phrase "in keeping with his merits and demonstrated ability" is by far the most important part of this resolution. General practitioners throughout the country want no special privileges but only the right to make available to their patients all of the modern advances of medical science without discriminatory restrictions unrelated to professional attainment. I sincerely hope that this House of Delegates and our county and state medical societies will continue to demonstrate their interest in this vital problem.

In my visits to state and county medical societies and, as a matter of fact, in the deliberations of this House of Delegates, I have observed increased warning signals that indicate a growing tension between general practice and specialization. Let me remind you that this same situation existed in England in 1947 when an ineffective, divided medical profession had forced upon it, virtually unopposed, socialized medicine. There were those who were far more interested in their own problems than in presenting a united profession capable of effective opposition.

Britain's National Health Service has tended to broaden the breach between general practitioners and specialists. Restrictions, special privileges, and favoritism have virtually divided the medical profession in England. It can happen here, unless we begin to think in terms of the medical profession as a whole and our responsibility to the American people rather than perpetuating our petty jealousies.

We are all doctors of medicine, and any cleavage within our profession is bound to weaken the bulwark that has made American medicine the finest in the world. We will remain strong only if we remain united. I would appeal to you to work together during the coming year as doctors of medicine interested only in the improved care we can give our patients.

Public Opinion Survey

During the past year we—as a profession and an association—voluntarily went to the people for a checkup, a public opinion examination by them for our own edification. We were aware of some of our symptoms and conditions, but, like many patients, we were not sure if our own personal diagnosis was correct. At the same time we also asked 500 practicing physicians to make a critical self-examination as a further check on the profession and the A. M. A. These clinical examinations, so to speak, turned up a few more conditions than we had reported but disclosed that the profession can do much to help improve healthful relations with patients.

Most people tend to think of their physician as "someone special." They want a physician who has a personal interest in them, is sympathetic and kind, is competent and intelligent, and is frank and honest. According to the survey, these are the things most people are finding in their physicians. But these are the things all patients should find in their physicians. The public, however, still continues to be critical of us for high fees, for coldness and impatience, for lack of frankness, and for unavailability. The interviewed physicians themselves feel that they do not give as much time as patients would like, and they feel there is something to the criticism that they are not always available in an emergency. Undoubtedly most of us, if interviewed, would have given the same views. The findings by the public and the 500 physicians are mostly familiar symptoms and conditions, but this does not mean that the findings should be ignored. Personal steps by each of us should be taken to reduce and eliminate the criticisms by the people and by our fellow doctors. The job is one for the individual physician. Your local and state medical societies and the A. M. A. can help, but essentially the task of better relationships with your patients and of improving your service is your job.

Naturally, in our surveys of the opinions of the public and physicians we asked them about their views of the A. M. A. Only 8% of the physicians polled said their impressions of the A. M. A. were either all bad or more bad than good. Sixty-nine per cent of the public who know the A. M. A. state favorable impressions. What is encouraging to me is that the A. M. A. and its good work are being recognized more and more by the public. Slightly less than half of the people polled had any knowledge of the A. M. A., but to me this is a high percentage when you realize that many persons cannot tell you the name of the President of the United States, their governor, their U. S. senators, or their representatives.

Those who know the A. M. A. praise our work in maintaining high standards for physicians. They also like us for informing physicians and exchanging ideas, for public information and public relations, for serving and protecting the public, and for watching closely the profession, schools, and hospitals. The major criticism of physicians is that the A. M. A. does not poll its full membership for opinion. Otherwise physicians like THE JOURNAL, meetings and conventions, information and exchange of ideas, and legislative interests and lobbying. Thus, the physical checkup of both the profession and the A. M. A. by the public and the physicians has provided us with valuable information on how to improve and to overcome certain conditions.

Waiting Room Time

For a moment, let us look at one of the most frequent complaints of patients—waiting room time. Personally, I do not believe doctors have a monopoly on being busy. Everyone is busy. The business or professional man, the factory worker, the housewife, and even the retired person usually have a thousand and one things to do. The complexity of modern life forces everyone to be busy. I sincerely feel that we should make every effort to conserve the patient's time while he is in our reception room. Many complaints rightfully have been registered about excessive time spent by patients in waiting to see us. Most of us know how this excessive waiting time can be reduced in our own offices, but too often we fail to take the steps to correct the problem. Remember, the situation is not going to get better without your attention. Our survey shows that patients are complaining twice as much about long waiting as about fees.

There is no excuse for "standing room only" in reception rooms. Even when emergencies arise, our assistants can explain graciously what has happened. Then perhaps new appointments can be made or the patients can be asked to return in an hour or so. Another practice I personally deplore is that of allowing the preferred patient to come in the back door ahead of those persons waiting in the reception room. Patients are wise. They know what is going on and they resent it. If you want to do something special for your friends, that is fine, but do not do it at the expense of the other patients in the waiting room. By reducing the amount of waiting time in the reception room, we will benefit too. There will be less patient criticism, and we will find them more composed and cooperative when we get to see them.

Diagnosis—Explaining It to the Patient

Another complaint of our patients is the lack of frankness and honesty in explaining the diagnosis, the treatment, or the surgery performed. As you remember, the American people demanded to know all of the facts during World War II and the Korean conflict. They wanted to know the news, good or bad. They insisted upon facing reality rather than running away from it. This desire has become a part of the make-up of most Americans. In everything in which we participate we insist upon knowing the full story.

So when a doctor tells a patient, "Don't worry about a thing," he is not fostering good doctor-patient relationships. Why should a patient accept such a vague statement? His health is his personal concern, and he should know if he has a disease or if he does not, if he needs an operation or if he does not. We need the patient's cooperation, assistance and agreement if we are going to help him. We cannot get this if we are constantly hedging and giving general, rather than specific, answers to his questions. Our diagnosis should be explained so that the patient has a clear concept of his illness, its nature, and its course. Absolute honesty and frankness in this matter will be appreciated by the patient.

If an operation is necessary, some of the basic details should be given to the patient. Certainly, after the opera-

tion the doctor should explain carefully to the patient exactly what has been done and why. There are extreme cases, of course, when the full story cannot be told to the patient, but in these cases a relative or a close friend of the patient should be informed. Thus, in almost all cases the patient has a right to know. He comes to us in the first place because he is concerned about his physical condition. He comes voluntarily, ready to pay for our services. He has the right to know what we have discovered about him, whether it is good or bad news.

Our Aging Population

One of the problems medicine will be placing more and more emphasis on is our aging population. Long ago the A. M. A. recognized that this was going to be a serious problem; so we set up a Committee on Aging. Recently that Committee has been reactivated and reorganized with Dr. H. B. Mulholland of Charlottesville, Va., as Chairman. I am sure Dr. Mulholland and his Committee will agree with me that this problem of the aging has mushroomed in the last decade or so. Today more than half of the people in the United States are living beyond the age of 67. I am happy to say that I am one of this group. I also am glad to tell you that my doctor has not, as yet, placed me on a diet of "senior foods."

The 1954 census shows that there are almost 14 million Americans over the age of 65, or about one in every 12 persons, and the rate of increase in this age bracket is a staggering 400,000 persons a year. Today, everyone wants to live to old age, and medicine has played an important part in helping more people to attain the age of 60, 70, 80, and more. But our goal must be more than simply the attainment of old age for more people; it also must include good health in old age.

I sincerely believe it is part of Nature's plan that we remain physically and mentally alert to the end of our days. Already great advances are being made to retard, relieve, delay, and defeat the four common medical disorders among the aged: vascular deterioration, cancer, arthritis and rheumatism, and mental disorders. Our search for relief of the physical pains and disabilities of old age should be never-ending, for the challenge of this huge problem is now one of the greatest facing medicine in recent decades. As we work on this problem, we do not work alone; others in every related field of medicine are seeking solutions to the common medical disorders of the aged. Still others are providing appropriate vocations, homes and places of rest, and necessary recreational facilities both in the home and outside. All of us have the challenge of taking tiredness and ill health out of retirement and old age, and I do not believe any time should be lost in attacking the problem from every angle.

Closed Panels and Union Health Centers and Foreign Graduates

Two other issues I would like to touch upon before closing are (1) closed panels and union health centers and (2) graduates of foreign medical schools. We older physicians have witnessed what might be considered by some to be revolutionary changes in the practice of medicine over the past 50 years. There is no indication that these changes are at all near an end. I predict we will witness many equally significant changes in the practice of medicine in the years to come. Some of these undoubtedly will be good, others bad. It is the responsibility of the medical profession to exert its influence to the end that any changes contemplated are in the best interests of the general public.

Voluntary health insurance programs, closed-panel practices coordinated with third-party financing arrangements, and union health centers will, in my opinion, play important roles in the changes that may take place in the future. Whenever such changes have in them inherent elements that may adversely affect the quality of care rendered, the profession must express itself in no uncertain terms. However, it is my firm belief that we can accomplish much more by competing with these new systems and demonstrating the high quality of private practice rather than to fight and oppose them.

Recently, the Board of Trustees considered a detailed report of the Cooperating Committee on Graduates of Foreign Medical Schools. It voted to approve in principle the report and authorized the American Medical Association to become a parent member organization of the Evaluation Service for Foreign Medical Graduates, an organization formed as a not-for-profit corporation. The detailed committee program, made by members of the A. M. A., the American Hospital Association, the Association of American Medical Colleges, and the Federation of State Medical Examining Boards, is designed to test and evaluate foreign-trained physicians, and this plan is being presented to this House of Delegates for its consideration. With hundreds of graduates of foreign medical schools seeking to acquire hospital positions in the United States or to become licensed practitioners here, the cooperating committee has tried to find a practical way to operate an evaluation service and to test applicants here and abroad. I know you will consider this plan carefully and will act prudently on this matter.

Conclusions

In conclusion I want to emphasize this: I fully realize that I as an individual have no personal opinions on medical matters in the coming year as I travel around the country for you, and that the views I express will be those of this House of Delegates. I also realize the enormity of the task before me. I have no illusions as to my abilities, and I therefore appeal to you for your utmost cooperation and assistance.

HEALTH FILM CATALOG FOR TELEVISION

"Health Education by Television," an excellent catalog of public health motion picture films cleared for television use, has been prepared by public health officials of the Kalamazoo City-County Health Department, Kalamazoo, Mich. These films were selected and shown on the "Here's to Your Health" television public service program on station WKZO-TV, Kalamazoo. The American Medical Association has been granted permission to reproduce this catalog and make it available without charge to those interested in using health films on television. Requests for this catalog should be addressed to the American Medical Association, Motion Pictures and Medical Television, 535 N. Dearborn St., Chicago 10.

MEDICAL NEWS

CALIFORNIA

Outbreak of Gastroenteritis.—The California state department of health reports that, at a week-end outing for 63 boy scouts and adults at a winter resort in Tuolumne County, 46 of the group suffered an attack of gastroenteritis. Investigation revealed that the local water company was pumping raw creek water into its distribution system because its usual source of supply, a well, could not meet peak demands. Inspection of the watershed disclosed one definite septic tank discharge into the creek and three septic tank systems that have in the past overflowed into the creek.

Dr. Pottenger Honored.—Dr. Francis M. Pottenger recently was given a surprise at a dinner meeting at the Los Angeles County Medical Association headquarters, where he addressed 100 physicians on "One Hundred Years in the Prevention and Treatment of Tuberculosis." The 86-year-old physician, who has practiced 60 years in Los Angeles County, was presented with a leather-bound volume of more than 435 letters sent him from all over the world. Dr. Pottenger organized the Southern California Antituberculosis League in 1902, established the first private sanatorium in southern California at Monrovia in 1903, founded the Christmas Seal movement in Los Angeles County in 1909, and is responsible for founding the San Francisco Volunteer Tuberculosis Association. Active in local, state, national, and international tuberculosis associations, he is professor of medicine emeritus, diseases of the chest, University of Southern California School of Medicine, Los Angeles, and president emeritus of the Los Angeles County Tuberculosis and Health Association.

CONNECTICUT

Orthopedic Study on Stress.—A study on "bone engineering" is being conducted in New Haven under the direction of Dr. Charles O. Bechtol, associate professor of orthopedic surgery at the Yale University School of Medicine, with the cooperation of Henry A. Lepper Jr., M.S., associate professor of civil engineering, to handle the technological side of the experiments. The eventual goal of the research work, aimed at defining the characteristics of bone, is the perfecting of the bone splint as a means of healing severe fractures.

Personal.—Dr. C. N. Hugh Long, chairman, department of physiology, Yale University School of Medicine, New Haven, is on a tour of research centers in Europe. He is invited to give the Halliburton Lecture at King's College, University of London, and to address the Endocrine Society of Great Britain and the International Physiological Congress, which will meet in Brussels, Belgium, July 30-Aug. 4. He has been invited also to meet with scientists in Jugoslavia, France, and Italy. Dr. Long has been a faculty member at Yale since 1936 and served as dean of the school of medicine from 1947 to 1952, when he retired as dean to devote full time to research. He will return to Yale in September.

DISTRICT OF COLUMBIA

Emergency and Disaster Service.—The Medical Society of the District of Columbia announces the formation of the Medical Emergency and Disaster Service (MEDS) as the culmination of its recent five-day course in disaster medicine.

Dr. Jeghers Accepts Seton Hall Appointment.—Dr. Harold J. Jeghers, director, department of medicine, Georgetown University School of Medicine, Washington, D. C., has resigned effective Aug. 1 and will become professor of medicine at the new Seton Hall University School of Medicine in Jersey City, N. J. He will remain as a consultant in the department of internal medicine at Georgetown. Dr. Jeghers was formerly a director of the medical service at the Boston City Hospital and associate professor of medicine at Boston University School of Medicine.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

INDIANA

Dr. Carter Honored.—Dr. F. R. Nicholas Carter, health officer of South Bend for 20 years, was given a testimonial banquet by representatives of business firms and leaders of city, county, and state medical organizations, also sponsored by the Health Council of St. Joseph County. A certificate of appreciation of service and a bound volume of testimonial letters from associates and officials of state and national prominence were presented. Dr. Carter's achievements, reviewed at the meeting, include initiation of (1) the preschool immunization program, to which was attributed South Bend's record of having had no deaths from smallpox, typhoid, or diphtheria since 1935 and (2) food handler examinations and restaurant grading and inspection. Dr. Carter was also the driving force in the adoption of the Grade-A milk ordinance in his community, the first large city of the state to adopt such a regulation.

KANSAS

Personal.—The Boeing Airplane Company, Wichita, recently appointed Dr. Raymond F. Holden Jr., formerly of St. Louis, as medical director, succeeding Dr. James T. Moy, who resigned to devote more time to private practice. Dr. Moy will continue his affiliation with the Boeing company as a consultant on a part-time basis.

Centenarian Honored.—Dr. George M. Gray, Kansas City, a past-president of the Kansas Medical Society, was honored at a dinner on March 4, his 100th birthday. Dr. Gray became a member of the surgical staff of St. Margaret's Hospital in Kansas City when it opened its doors, and he served as chief of its surgical staff for more than 15 years. He served as mayor when a vacancy occurred in that office during a period in 1906 and 1907. From Dec. 10, 1917, to Jan. 4, 1919, when he was a member of the U. S. Army Medical Corps, Dr. Gray served as medical military aide to the governor.

Student Loan Fund.—The Hinkhouse Medical Student Loan fund at the University of Kansas School of Medicine, Lawrence-Kansas City, has been announced by the dean of the school. The fund, with principal of $10,000, was created by annual contributions during the past four years to the Kansas University Endowment Association by Mr. Frank Hinkhouse of Palco. Loans are made to students with approval by the dean. Provision is made for repayment after the internship. No interest is charged until borrowers have graduated from medical school. Since the first contribution was made to the fund in 1952, 37 medical students at the university have received loans.

KENTUCKY

Personal.—Dr. F. Guy Aud, Louisville, past-president of the Kentucky State Medical Association, has been elected an honorary life member of the board of directors of the American Cancer Society, of which he is a former director and president.

Hagan Memorial Fund.—A memorial fund in honor of the late Dr. James E. Hagan, Hazard, who died Oct. 23, 1955, has been turned over to the improvement program at Collins (Athletic) Field in Hazard by his widow, who had requested that any tribute to her husband be in the form of pledges that could be given to a worthy cause.

University News.—Dr. Alex J. Steigman, head of the department of pediatrics, University of Louisville School of Medicine, has announced the following appointments: Dr. Joseph A. Little,

physician-in-chief for the Children's Hospital Division of the department; Dr. William Curtis Adams, pediatric service director for the Louisville General Hospital Division; Dr. Mary O. Cruise, director of Well Baby Clinics; and Dr. Frank A. Faulkner, director of the Longitudinal Growth Study. Dr. Little is an associate professor, and Dr. Adams, Dr. Cruise, and Dr. Faulkner are assistant professors in the department.

MAINE

State Medical Meeting in Rockland.—The Maine Medical Association will hold its 103rd annual session at the Samoset, Rockland, June 24-26, under the presidency of Dr. Martyn A. Vickers, Bangor. The scientific sessions will open Monday, 11 a. m., with "Things I Have Learned in Gynecological Practice" by Dr. Joe V. Meigs, Boston. "The Ways of Life and Heart Disease" by Dr. Paul D. White, Boston, will precede the luncheon, at which round-table discussions will be conducted by Drs. Meigs and White. At 2 p. m. there will be a symposium on rehabilitation, with Dr. Howard A. Rusk, New York, as moderator. On Tuesday morning Dr. Curtiss B. Hickcox, Hartford, Conn., will discuss "Modern Concepts of Oxygen Therapy"; Dr. Lauren H. Smith, Philadelphia, will consider "The Critical Evaluation of Somatic Therapy in Psychiatry"; and Dr. Richard D. Brasfield, New York, will present a film in sound and color, "Total Right Hepatic Lobectomy." The Maine Medico-Legal Society will hold its annual meeting Tuesday at 10 a. m. and will meet also at 2 p. m., when the speaker will be Dr. Alan R. Moritz, Cleveland. At 2 p. m. Dr. Hickcox will address the Maine Society of Anesthesiologists, his subject being "Problems in Clinical Anesthesia." The Maine Pediatric Society will have as speaker Dr. Sydney S. Gellis, Boston, whose topic will be "Differential Diagnosis of Jaundice in Children." Dr. Julius L. Wilson, Philadelphia, will present "Pulmonary Emphysema, an Everyday Problem in Treatment" for the Maine Trudeau Society. Social events will include a dinner Sunday, 6:30 p. m., at which Mr. Samuel H. Ramsey will speak on "Human Relations Is Your Business"; a cocktail party and annual banquet Monday, 6:30 p. m., at which "Two Ways to Slavery" will be the topic of Mr. James M. Rogers; and a clam bake Tuesday, 6:30 p. m. The woman's auxiliary will meet concurrently.

MARYLAND

Memorial Fund.—A memorial fund has been established in honor of the late Dr. George H. Smith, U. S. Public Health Service fellow in psychiatry, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, who died Nov. 7, 1955. Contributions may be sent to Dr. Virginia Huffer, Treasurer, the George H. Smith Memorial Fund Committee, University Hospital, Baltimore 1.

MASSACHUSETTS

Research in Orthopedics.—Plans to study the structural and mechanical functions of the bones, joints, and muscles and the problem of braces and other mechanical aids for the body were recently announced by the Massachusetts Institute of Technology in cooperation with the Massachusetts General Hospital, Boston. A $10,000 grant to the institute by the Donner Foundation of Philadelphia will finance a two-year research program on engineering in orthopedics. Robert J. Hansen, Sc.D., associate professor of structural engineering, will be supervisor of the work at the institute. It will be conducted in cooperation with the orthopedic service of the Massachusetts General Hospital under the direction of Dr. Joseph S. Barr, professor of orthopedic surgery, Harvard Medical School, Boston, and head of the orthopedic service at the hospital.

Personal.—Dr. Franklin K. Paddock was recently named chief of staff at Pittsfield General Hospital, a position formerly filled by both his father, the late Dr. Brace W. Paddock, and his grandfather, who was the hospital's first chief of staff and served the then House of Mercy when it was established in 1874 in a cottage on Francis Avenue. Dr. Paddock succeeds Dr. George S. Reynolds, who has served for 10 years, the maximum allowed. Dr. Paddock is an executive councilor for the Massachusetts Medical Society, an adviser to the Berkshire County chapter, National Foundation of Infantile Paralysis, and to the county arthritis organization, and a director of the Berkshire County Heart Association.——The New England Mutual Life Insurance Company of Boston has appointed Dr. Olin C. Hendrix medical director to succeed Dr. Frederick R. Brown, retired.——Dr. Leopold Reiner, pathologist of Beth Israel Hospital at Boston, has been appointed director of laboratories at the Bronx Hospital, New York City, to succeed the late Dr. Joseph Felsen. Dr. Reiner has served as clinical associate in pathology at Harvard Medical School, Boston. He recently was appointed visiting associate professor of pathology at Albert Einstein College of Medicine, New York.——Dr. Charles Caroll Lund, surgeon-in-chief of the Fifth (Harvard) Surgical Service at Boston City Hospital, has been appointed clinical professor of surgery at Harvard Medical School in Boston, with which he has been affiliated since 1922. He is a past-president of the Suffolk District Medical Society and a member of the staffs at New England Deaconess Hospital, New England Baptist Hospital, Beth Israel Hospital, Boston, Mount Auburn Hospital, Cambridge, and St. Louis Hospital, Berlin, N. H.

MISSOURI

State Medical Election.—Newly elected officers of the Missouri State Medical Association include: Dr. Carl F. Vohs, St. Louis, president; Dr. Walter S. Sewell, Springfield, president-elect; Dr. Victor E. Scherman, St. Louis, vice-president; Dr. William J. Shaw, Fayette, vice-president; Dr. Robert E. Breuer, Newburg, vice-president; Dr. E. Royse Bohrer, Jefferson City, secretary; and Dr. Jerome I. Simon, St. Louis, treasurer.

Child Evaluation Clinic.—The Washington University Child Evaluation Clinic, St. Louis, opened Feb. 1, primarily for diagnosis and guidance of mentally retarded children. The clinic, located temporarily on the second floor of the Renard Hospital in the Medical Center, is supported by funds from the Children's Research Foundation, the St. Louis Association for Retarded Children, and the United Fund. The facilities of the medical center are available for diagnostic study, for counseling of parents, and for planning of rehabilitation programs. The clinic will also be concerned with the teaching and training of personnel in the study and care of mentally retarded children and with research relating to methods of evaluation and rehabilitation. Bettye M. Caldwell, Ph.D., research associate in medical psychology and pediatrics at the medical school, has been appointed director of the clinic. Staff members include representatives of all the medical and allied specialties that contribute to the study of the retarded child.

NEBRASKA

Flebbe Memorial Fund.—The Dr. Richard A. Flebbe Memorial fund was recently donated to the radiological department of the Nebraska Methodist Hospital, Omaha, by Dr. Flebbe's widow. The fund will be used for research activities of the radiological center.

Dr. McCarthy Honored.—Dr. Timothy F. McCarthy, Lincoln, recently received awards from St. Elizabeth Hospital, Lincoln, and Creighton University, Omaha. Dr. McCarthy, who joined the hospital medical staff in 1910, was instrumental in establishing the school of nursing. Dr. Frederick G. Gillick, dean, Creighton University School of Medicine, Omaha, was speaker at the award dinner, and Dr. George H. Misko, president, St. Elizabeth medical staff, was toastmaster.

University News.—Dr. Theodore F. Hubbard, previously associated with Creighton University School of Medicine, Omaha, has been appointed assistant professor of internal medicine at the University of Nebraska College of Medicine. Dr. Charles E. Richards, formerly assistant professor of internal medicine at the Bowman Gray School of Medicine of Wake Forest College and director of the outpatient department at North Carolina Baptist Hospital, Winston-Salem, N. C., has been named director of the dispensary and associate professor of internal medicine at the University of Nebraska College of Medicine, Omaha.

OHIO

Grant in Infantile Paralysis.—The National Foundation for Infantile Paralysis has made a grant of $200,797 to the University of Cincinnati and the Children's Hospital Research Foundation for continued research toward a live virus vaccine, under the direction of Dr. Albert B. Sabin, professor of research pediatrics, University of Cincinnati College of Medicine.

Grant to Health Museum.—Dr. Bruno Gebhard, director, Cleveland Health Museum, announces that the Cleveland Foundation has awarded a grant of $22,000 to the museum to be used over a two-year period. The money will assist in the creation of two new exhibits, "Mental Health" and "Heredity in Health and Disease," and in expansion of the staff of the education department.

Appoint Julius Stone Professor.—Dr. Gerhard A. Brecher, associate professor of physiology at Western Reserve University School of Medicine, Cleveland, was appointed the Julius F. Stone Research Professor for the 1955-1956 academic year. The post, named for the late Julius F. Stone, who served for many years as an Ohio state trustee, is filled annually by "distinguished persons who ... may best contribute to the growth and development" of the university. Dr. Brecher has studied at the University of Hamburg, Germany; Duke University, Durham, N. C.; the University of Lausanne, Switzerland; and the universities of Prague, Czechoslovakia, and Berlin and Rostock, Germany. In 1941, he returned to the University of Prague as senior instructor in physiology. From 1946 to 1948 he was chief physician for the United Nations Relief and Rehabilitation Administration Hospital in Bibersch, Germany.

Personal.—Dr. Philip C. Pratt, former assistant director and research pathologist at the Saranac Laboratory in New York, has been named chief of laboratories at Ohio Tuberculosis Hospital, Columbus.——Dr. Benjamin Pasamanick, formerly with Johns Hopkins School of Hygiene and Public Health, Baltimore, has been appointed director of research at Columbus Receiving Hospital and professor of psychiatry, Ohio State University College of Medicine, Columbus.——Dr. Albert B. Sabin, professor of research pediatrics, University of Cincinnati College of Medicine, who recently returned from a visit to European scientific centers, delivered a series of lectures in Portugal at the invitation of the Portuguese government and in Paris was awarded a Pasteur Institute silver medal after delivering a lecture. While in Europe Dr. Sabin made arrangements in several countries for cooperation on studies related to an attenuated poliomyelitis vaccine and with the National Institute of Medical Research in London on studies of a cold virus isolated in his laboratories.

OKLAHOMA

Memorial Trust Fund.—A memorial trust fund to finance cardiac research and education, recently authorized by the Tulsa County Heart Association, will utilize future memorial donations in carrying out a three-point program of activity: (1) financing of professional education programs in the field of cardiac diseases, including the obtaining of speakers for special programs designed primarily for doctors, (2) support of clinical or laboratory research, on a local, state, or national level, in cardiovascular diseases, including support of fellowships in cardiovascular research, and (3) purchase of specialized equipment for detection, diagnosis, and treatment of cardiovascular diseases in the association's heart clinics at St. John's Hospital and Hillcrest Medical Center of Tulsa.

TENNESSEE

Clinic for Alcoholics.—Dr. Theron S. Hill, superintendent of Gailor Memorial Psychiatric Hospital since its opening in 1942 and head of the department of neurology and psychiatry at the University of Tennessee College of Medicine, Memphis, has been granted a year's leave of absence to become director of the clinic for the study and treatment of alcoholics at 799 Court. During Dr. Hill's absence, his duties will be taken over by a committee, on which Dr. James Alston Taylor will serve as chairman, with Dr. Hill in a consultative capacity.

WEST VIRGINIA

Society News.—The West Virginia State Medical Association has bestowed on Miss Ruth Yelcich, a student at Fairmont Senior High School, its award of $25 for the best paper on a medical subject submitted by a member of the West Virginia Junior Academy of Science during the school year 1955-1956. Miss Yelcich's paper, "Preventing Mental Illness," was given at a meeting at West Virginia State College, Institute.

Personal.—Dr. Jogindar S. Grewal, Beckley pathologist and Raleigh County coroner, has moved to Binghamton, N. Y., to accept appointment as pathologist at Our Lady of Lourdes Memorial Hospital, 169 Riverside Dr. Before moving to Beckley from Binghamton about two years ago, Dr. Grewal designed the laboratory of the hospital, where he assumed his duties as pathologist on May 1.——Dr. Wade H. St. Clair of Bluefield, a past-president of the West Virginia State Medical Association, has been named "Man of the Year" by the Greater Bluefield Chamber of Commerce. Dr. St. Clair, co-founder of the Bluefield Sanitarium, was described in the presentation as "physician, humanitarian, hospital administrator, and a pioneer in modern medicine" and was praised for his many years of "unstinting, beneficial service in the Bluefield area."

WISCONSIN

Muscular Dystrophy Study.—A clinical study of muscular dystrophy, to be initiated at the University of Wisconsin with a $29,189 grant from the Muscular Dystrophy Association of America, will be directed by Dr. Henry A. Peters, professor of neurology and psychiatry at the University of Wisconsin Medical School, Madison, with Dr. Peter L. Eichman, instructor in neurology and internal medicine, as assistant director.

Bardeen Medical Laboratories.—The University of Wisconsin, Madison, announces that the six-story addition to the Service Memorial Institutes building will be named the Bardeen Medical Laboratories in memory of Dr. Charles R. Bardeen, who was appointed first dean of the medical school in 1907 and served in that capacity until his death in 1935. The laboratories, now under construction, will be given over to work in anatomy and physiological chemistry, to student laboratories, and to space for animal housing.

WYOMING

State Medical Meeting in Moran.—The 53rd annual meeting of the Wyoming State Medical Society will convene at Jackson Lake Lodge, Moran, June 28-July 1, under the presidency of Dr. Russell I. Williams, Cheyenne. All doctors of medicine are welcome to register and attend the scientific sessions. Dr. Elmer Hess, Erie, Pa., immediate past-president of the American Medical Association, will be the banquet speaker Friday, 7 p. m. Out-of-state speakers and their first presentations during the scientific sessions will include:

Present-Day Therapy for Shock of Surgical Patients, John S. Lundy, Rochester, Minn.
Vascular Trauma and Traumatic Aspects of Hematuria, Ben Eiseman, Denver.
Treatment of Fractures of Lower Leg, Roger Anderson, Seattle.
Early Treatment of Maxillofacial Injuries, Jerome A. Hilger, St. Paul.
Use of Adrenocortical Hormones as Anti-Inflammatory Agents, Thomas F. Dougherty, Ph.D., Salt Lake City.
Diagnosis of Common Hand Injuries, Paul J. Preston, Oak Knoll Naval Hospital, Oakland, Calif.
Ovarian Tumors in Women Under Forty, Harold S. Morgan, Lincoln, Neb.
Importance and Interpretation of Routine Blood Counts, Matthew H. Block, Denver.
Treatment of Rheumatoid Arthritis, Russell L. Cecil, New York.
Common Congenital Heart Lesions in Children—Diagnosis and Treatment, S. Gilbert Blount Jr., Denver.
Pulmonary and Extrapulmonary Tuberculosis in Children, Sidney H. Dressler, Denver.

The president's reception Thursday, 5:30-6:30 p. m., will precede an informal dinner, which will be followed at 8 p. m. by a smoker for the men and a mixer for the wives. A movie, "The Sea Around Us," will be shown at 8 p. m., courtesy of RKO Radio Pictures, Inc., and Fox Intermountain Theaters. The Pfizer Fishing Derby, to which wives and children are invited, is scheduled for Saturday, 2 p. m. At 7 p. m. there will be the Pfizer buffet supper, dancing, and square dancing. The woman's auxiliary will meet concurrently.

GENERAL

Dermatologic Meeting in Honolulu.—The eighth annual meeting of the Pacific Dermatologic Association will be held in Honolulu, Hawaii, June 24-28, with headquarters at the Reef Hotel. "Sun Light and Its Effects on the Skin" by Dr. John H. Lamb, Oklahoma City, Tuesday, 9 a. m., will precede the presidential address, "Dermatotropic Viruses" by Dr. Frederick G. Novy Jr., Oakland, Calif. "Medical Arts in Ancient Hawaii" will be presented by Dr. Nils P. Larsen, Honolulu, and "Exfoliative Dermatoses in Infancy" by Dr. Francis W. Lynch, St. Paul. Tuesday afternoon will be devoted to a clinic on leprosy at the Leprosarium—Hale Mohalu, to which bus transportation will be made available. From 6 to 8:30 p. m. Dr. and Mrs. Harry L. Arnold will be hosts for cocktails (4992 Kahala Ave.). A clinical pathologic conference Wednesday morning will have as guest moderator Dr. Herman Beerman, University of Pennsylvania School of Medicine, Philadelphia. The banquet is scheduled for 8 p. m. On Thursday morning Dr. Lynch will present "Multiple Pigmented Basal Cell Epitheliomas"; Dr. Beerman, "Dermatopathology in Research"; Dr. Lamb, "The Status of Steroid Hormones"; and Dr. Thomas H. Sternberg, Los Angeles, "The Current Status of Antifungal Antibiotics."

Regional Surgical Meeting.—A midsummer regional surgical meeting has been scheduled by the United States Section, International College of Surgeons, July 1-6, at the Marshall House, York Harbor, Maine, with Dr. M. Leopold Brodny, Boston, as general chairman. Papers, panels, and symposiums will be included in a program on general surgery, obstetrics and gynecology, neurology, otorhinolaryngology, orthopedics, ophthalmology, and urology, the principal theme of which will be rehabilitation. Dr. William Dameshek, professor of medicine at Tufts College Medical School, Boston, who returned recently from Russia, will give a report on medicine behind the Iron Curtain. Dr. Max Thorek, Chicago, founder and secretary general of the International College of Surgeons, will present a progress report on the International Surgeon's Hall of Fame. Investment authorities will give talks of economic interest. Dr. Arnold S. Jackson, Madison, Wis., president of the United States Section, will preside at the opening session, which will begin with "Rehabilitation in All Its Phases" by Dr. Ross T. McIntire, Chicago, executive director of the college, followed by two films: "Technique of Rehabilitation of the Armless" by Dr. Henry H. Kessler, Newark, N. J., and "Surgical Treatment of Malignant Exophthalmos" by Dr. Joseph F. Dorsey, Boston.

Meeting on Neoplastic Diseases.—The American Association for the Study of Neoplastic Diseases will hold its annual meeting at the Drake Hotel, Chicago, June 30-July 2, under the presidency of Dr. John A. Wagner, Baltimore. Saturday morning Dr. Elizabeth A. McGrew, associate professor of pathology, University of Chicago School of Medicine, will discuss "Exfoliative Cytology." In the afternoon Dr. Paul E. Steiner, professor of pathology, University of Chicago School of Medicine, will present "Some Observations on the Etiology of Lung Cancer" and Philippe Shubik, Ph.D., associate professor of pathology, Chicago Medical College, will consider "Carcinogenesis as a Problem in Chronic Toxicity Testing." A cocktail hour, 6:30 p. m., will precede the dinner meeting, 7 p. m., at which Dr. Max Cutler, formerly director of the Chicago Tumor Institute and now a member of the surgical staff of Cedars of Lebanon Hospital, Los Angeles, will deliver the Bloodgood Memorial Lecture, "The Nature of the Cancer Process—Is It Reversible?" On Sunday at 9 a. m. Dr. Arnold F. Strauss, pathologist, De Paul Hospital, Norfolk, Va., and consulting pathologist, state of Virginia, will speak on medicolegal implications of tumors, with case presentations. The remainder of the day will be free for sight-seeing. Dr. Wagner will preside over a slide seminar on tumor registry cases Monday morning. In the afternoon Dr. Arthur S. J. Petersen, Chicago, will conduct an x-ray session with case presentations and microscopic correlation and Dr. Victor Levine, Chicago, a microscopic session.

FOREIGN

Meeting on Gastroenterology.—The International Congress of Gastroenterology, the fifth meeting of the association of European and Mediterranean societies interested in gastroenterology will convene in London, England, July 18-21, at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W. C. 2. Subjects for discussion will include Nonmalignant Conditions of the Oesophagus and Ulcerative Colitis. Among the participants from the United States will be Drs. Mandred W. Comfort, Jacob A. Bargen, and Charles F. Code, Rochester, Minn.; Asher Winkelstein, New York; Albert M. Snell, Palo Alto, Calif.; and Henry L. Bockus and C. Wilmer Wirts Jr., Philadelphia. A reception by the vice-chancellor of the University of London at the Seante House is planned for Wednesday evening as is a visit to the Tower of London (the Crown Jewels and the Ceremony of the Keys). On Thursday evening, receptions are scheduled by Her Majesty's government at Lancaster House, St. James's, and by the Royal College of Physicians of London. The banquet at Guildhall will be held Friday evening.

CORRECTION

Stereotaxic Instrument.—In the article entitled "A New Type of Locally Applied Stereotaxic Instrument" in THE JOURNAL, May 12, 1956, on page 148, the seventh line, as published, was misplaced and should have been the fourth line.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations in the United States and Canada, July 20. Final date for filing application was Jan. 20. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15, Conn.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written.* Various centers, July 26. *Oral.* St. Louis, Oct. 12-15. Final date for filing applications was April 1. Sec., Dr. B. M. Kesten, One Haven Ave., New York 32.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 15, 1956. Final date for filing application was May 1. *Oral Examinations in 1956.* Chicago, June 7-9. Final date for filing application for these three oral examinations was Jan. 3. New York City, Sept. 21-25. Final date for filing application was April 1. *Cardiovascular Disease.* Chicago, June 6. The number of candidates is limited to 24 and the final date for filing applications was Apr. 2. Exec. Sec., Dr. William A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I.* 1957. Applications now being accepted. Final date for filing applications is Oct. 1. Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Practical Examination.* San Francisco, June 18-21, St. Louis, Oct. 20-24. *Written.* Jan. 21, 1957. Applications must be filed before July 1, 1956. Sec., Dr. Merrill J. King, Box 236, Cape Cottage Branch, Portland 9, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Oral. Part II.* Chicago, January 1957. Final date for filing application is Aug. 15. Sec., Dr. Sam W. Banks, 116 South Michigan Ave., Chicago 3.

AMERICAN BOARD OF PATHOLOGY: *Written for Pathological Anatomy and Clinical Pathology,* Oct. 4-6. Final date for filing application is Sept. 1. Sec., Dr. Edward B. Smith, 1040-1232 W. Michigan St., Indianapolis 7.

AMERICAN BOARD OF PEDIATRICS: *Oral, Part II.* Cincinnati, June 8-10; New York City, Oct. 12-14, and San Francisco, Dec. 7-9. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Parts I and II.* Chicago, June 16-17. Sec., Dr. Earl C. Elkins, 200 First St., S.W., Rochester, Minn.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Oral and Written. Public Health.* Philadelphia, Nov. 8-10. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore, Md.

AMERICAN BOARD OF PROCTOLOGY: *Oral and Written.* Philadelphia, Sept. 29. Final date for filing application is June 28. Sec., Dr. Stuart T. Ross, 520 Franklin Ave., Garden City, N. Y.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* New York, Dec. 10-11 and New Orleans, Mar. 18-19. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: Chicago, June 5-9. Final date for filing applications was Jan. 1.; Los Angeles, Sept. 30-Oct. 4. Final date for filing application was June 1. Sec., Dr. B. R. Kirklin, Kahler Hotel Bldg., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: February 1957. Sec., Dr. William Niles Wishard, 1711 N. Capitol Ave., Indianapolis 7.

BOARD OF THORACIC SURGERY: *Written.* Various centers throughout the country, September. Final date for filing application is July 1. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Pratt, Joseph Hersey ✠ Boston; born in Middleboro, Mass., Dec. 5, 1872; Johns Hopkins University School of Medicine, Baltimore, 1898; assistant resident pathologist 1898-1899, then resident pathologist from 1890 to 1900 at the Boston City Hospital, where he was assistant visiting pathologist from 1900 to 1902; subsequently studied in Europe; instructor in pathology from 1900 to 1902, when he became assistant in medicine at Harvard Medical School, where he was an instructor from 1909 to 1917; professor of clinical medicine at Tufts College Medical School from 1929 to 1947, when he became professor emeritus; specialist certified by the American Board of Internal Medicine; from 1903 to 1905 fellow at the Rockefeller Institute; past-president of the American Clinical and Climatological Association and the Society for the Advancement of Clinical Research; member of the Association of American Physicians, American Physiological Society, American Society for Clinical Investigation, the Endocrine Society, American Association of Pathologists and Bacteriologists, American Academy of Arts and Sciences, National Tuberculosis Association, of which he was director from 1926 to 1928, Society of Mayflower Descendants, American Society for Experimental Pathology, Nu Sigma Nu, and Alpha Omega Alpha (Tufts Chapter); fellow of the American College of Physicians; member of the House of Delegates of the American Medical Association in 1914 and acting secretary of its Section on Practice of Medicine, 1919-1920; veteran of World War I; in 1931 and 1932 participated in former President Herbert Hoover's conference on home building, serving as chairman of the committee on housing and the community; became one of the leaders in the development of the New England Medical Center, which now includes the Boston Dispensary, the Boston Floating Hospital, Tufts University schools of medicine and dental medicine, and the Pratt Diagnostic Clinic-New England Center Hospital with its Bingham Fund Associates Program for the Advancement of Rural Medicine, of which he was vice-president; physician-in-chief at the Pratt Diagnostic Clinic and Hospital, which was named in his honor; consulting physician, Brockton (Mass.) Hospital, Sharon (Conn.) Hospital, Eastern Maine General Hospital in Bangor, and Woonsocket (R. I.) Hospital; member of the alumni council, Johns Hopkins University in Baltimore from 1908 to 1916; on the advisory council of the Phipps Institute, University of Pennsylvania, Philadelphia; on June 20, 1955, to commemorate his 50th anniversary as a pioneer in group therapy, a meeting was sponsored at the New England Medical Center by the chaplains of hospitals in New England under the supervision of the Massachusetts Council of Churches; received the honorary doctor of science degree from Colby College, Waterville, Maine, in 1941 and Tufts College in 1944; joint author with Col. George E. Bushnell of a book entitled "The Physical Diagnosis of Diseases of the Chest"; author of "A Year with Osler," published in 1949; died in the Pratt Diagnostic Clinic and Hospital March 3, aged 83, of heart disease.

Laws, Carl Henry, Brooklyn, N. Y.; born in 1884; Minneapolis College of Physicians and Surgeons, 1907; professor emeritus of pediatrics at the State University of New York College of Medicine, formerly known as the Long Island College of Medicine, where he was professor of pediatrics, 1930-1931, and professor of clinical pediatrics from 1931 to 1937, when he became professor of child health and welfare; instructor in pediatrics and contagious diseases at the University of Michigan Medical School, Ann Arbor, from 1915 to 1917; specialist certified by the American Board of Pediatrics; member of the Medical Society of the State of New York and the American Academy of Pediatrics; consultant in pediatrics at Coney Island, Lutheran, and Long Island College hospitals in Brooklyn, Mary Immaculate Hospital in Jamaica, and St. Joseph Hospital in Far Rockaway; died Feb. 29, aged 71, of coronary disease.

✠ Indicates Member of the American Medical Association.

Fishwick, Dwight Brown, Coral Gables, Fla.; born in Chicago July 3, 1906; Columbia University College of Physicians and Surgeons, New York City, 1932; member of the Connecticut State Medical Society; specialist certified by the American Board of Surgery; certified by the National Board of Medical Examiners; interned at the Presbyterian Hospital in New York City; formerly a resident in the New Haven (Conn.) Hospital and the Bellevue Hospital in New York City; served during World War II; formerly on the faculty of Marquette University School of Medicine in Milwaukee, and on the staff of the Waukesha (Wis.) Memorial Hospital; at one time on the staff of the State of Connecticut Veterans Home and Hospital in Rocky Hill; on the staff of the Veterans Administration Hospital, where he died March 5, aged 49, of esophageal varices with hemorrhage and cirrhosis of the liver.

Coleman, Frederick Charles ✠ San Antonio, Texas; born Nov. 13, 1919; University of Pennsylvania School of Medicine, Philadelphia, 1943; interned at the Reading (Pa.) Hospital, where he served a residency; formerly a resident in the Veterans Administration Hospital in Wadsworth, Kan.; specialist certified by the American Board of Pathology; member of the College of American Pathologists, Texas Academy of Science, Texas Society of Pathologists, San Antonio Society of Pathologists, World Medical Association, and the American Society of Clinical Pathologists; served in the Medical Corps, Army of the United States from 1946 to 1948; consultant in pathology at Veterans Administration Hospital in Legion; on the staff of Robert B. Greene Hospital; assistant pathologist at Santa Rosa Hospital; died Jan. 29, aged 36, of myocarditis and acute cerebral edema.

Feaster, Henry Joseph ✠ Brooklyn, N. Y.; born in New York City May 30, 1893; Long Island College Hospital, Brooklyn, 1916; clinical assistant professor of otolaryngology at his alma mater, now known as the State University of New York College of Medicine; served during World War I; specialist certified by the American Board of Otolaryngology; junior fellow of the American Academy of Ophthalmology and Otolaryngology; fellow of the American Academy of Compensation Medicine and the American College of Surgeons; past-president of the Bay Ridge Medical Society; member of the Association of Military Surgeons of the United States; on the staffs of the Long Island College, Victory Memorial, and Bay Ridge hospitals, Norwegian Lutheran Deaconess Home and Hospital, and Angel Guardian Home; died March 8, aged 62, of coronary disease.

Hall, Walter Dawson, Marengo, Iowa; born in Olney, Ill., Jan. 18, 1879; Loyola University School of Medicine, Chicago, 1916; served during World War I; examiner for the Iowa County Draft Board during World War II; member of the American Association of Railroad Surgeons; examiner for the bureau of pensions; examiner for the Eighth U. S. Civil Service Region and the U. S. Railroad Retirement Commission; for 32 years local surgeon for the Rock Island Railroad; at one time served with the Chicago Board of Health; for two years junior physician at the City of Chicago Municipal Tuberculosis Sanitarium; formerly medical director of the Grace Lutheran Sanitarium in San Antonio, Texas; physician and surgeon in charge of the Mineral Springs Hospital, where he died Feb. 9, aged 77, of cerebral vascular accident.

Kurth, Harold Richard ✠ Lawrence, Mass.; born in New Britain, Conn., Aug. 22, 1895; Harvard Medical School, Boston, 1919; fellow of the International College of Surgeons and the American College of Surgeons; member of the House of Delegates of the American Medical Association in 1951, 1954, and 1955; honorary fellow of the International Academy of Proctology; president-elect and formerly a member of the committee on public relations of the Massachusetts Medical Society; served as secretary and public relations councilor of the Essex North District Medical Society; consultant at Clover Hill and Bon Secours hospitals; president of the Lawrence General Hospital staff and chief of surgery; died in Andover Feb. 7, aged 60, of coronary thrombosis.

Brown, Elwyn Vance ✠ Redlands, Calif.; University of Southern California School of Medicine, Los Angeles, 1946; interned at the Los Angeles County Hospital; member of the American Society of Anesthesiologists; served during World War II; on the staffs of the San Bernardino (Calif.) County Charity Hospital and the Redlands Community Hospital, where he died Feb. 23, aged 37, of coronary thrombosis.

Conley, Charles Henry, Frederick, Md.; Baltimore Medical College, 1899; past-president of the Frederick County Medical Society; an associate member of the American Medical Association; past-president of the Maryland State Fair Association and the Frederick Kiwanis Club; member of the board of managers of the Frederick County Agricultural Society for many years and served as its president; veteran of World War I; on the emeritus staff, Frederick Memorial Hospital; died March 20, aged 79, of coronary artery disease.

Cushman, Joseph Brilling ✠ San Jose, Calif.; Rush Medical College, Chicago, 1934; specialist certified by the American Board of Anesthesiology; member of the American Society of Anesthesiologists; served during World War II; formerly on the staff of the Veterans Administration Hospital in Livermore; died Jan. 17, aged 49, of myocardial infarction and arteriosclerotic heart disease.

Dickson, Alvis Barnes ✠ Commander, U. S. Navy, Raeford, N. C.; George Washington University School of Medicine, Washington, D. C., 1943; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgeons; fellow of the American College of Surgeons; last tour of duty station, U. S. Naval Hospital in Philadelphia, where he died Jan. 28, aged 36, of pulmonary atelectasis, massive retroperitoneal hemorrhage, and teratoma of testis with metastasis.

Frailey, Denton M. G. ✠ Harrison, Ark. (licensed in Arkansas in 1903); at one time postmaster of Cave Creek; died March 18, aged 87, of acute bronchitis and nephritis.

Gaydosh, Michael, Wheeling, W. Va.; University College of Medicine, Richmond, 1904; an associate member of the American Medical Association; served as city councilman; vice-president of the Union Federal Savings and Loan Association; on the staffs of the Ohio Valley General Hospital and the Wheeling Hospital, where he died March 30, aged 79, of arteriosclerotic heart disease.

Gleason, John Elwin ✠ Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staff of the Grace Hospital; died in Fort Lauderdale, Fla., March 19, aged 77, of acute left ventricular failure.

Goines, William Cecil, Washington, D. C.; Howard University College of Medicine, Washington, D. C., 1930; also a graduate in pharmacy; veteran of World War I; served with the Selective Service System during World War II; died in the Veterans Administration Hospital, Mount Alto, April 12, aged 60, of cerebral hemorrhage, hypertension, and chronic pyelonephritis.

Gonce, John Eugene, Jr. ✠ Madison, Wis.; University of Pennsylvania School of Medicine, Philadelphia, 1918; professor and chairman of the department of pediatrics at the University of Wisconsin Medical School; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; fellow of the American College of Physicians; died March 25, aged 62, of coronary thrombosis.

Goodwin, Olin Mansell ✠ Fairmont, W. Va.; Medical College of Virginia, Richmond, 1941; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; interned at the University of Virginia Hospital in Charlottesville; formerly a resident in otolaryngology at the State University of Iowa Hospital in Iowa City; served during World War II; died in the Fairmont General Hospital Feb. 28, aged 40, of myocardial infarction.

Habel, James Martin ✠ Jetersville, Va.; Medical College of Virginia, Richmond, 1910; on the staff of the Southside Community Hospital in Farmville; died March 6, aged 74, of thrombosis.

Hightower, Lovick Pierce ✠ Fort Worth, Texas; Baylor University College of Medicine, Dallas, 1932; pathologist with Terrell Laboratories; died in All Saint's Hospital March 8, aged 68, of myocardial infarction.

Hiken, Lawrence Lowell, Van Nuys, Calif.; Marquette University School of Medicine, Milwaukee, 1947; specialist certified by the American Board of Radiology; on the staff of the Kaiser Foundation Hospital in Los Angeles; died Feb. 17, aged 31.

Johnson, Sarah Coppinger ✠ Hollis, N. H.; Tufts College Medical School, Boston, 1911; a member of the board of trustees of the New Hampshire State Hospital in Concord; appointed to the Child Welfare Commission by President Hoover; died March 11, aged 72, of myocardial failure.

Morrison, Wesley Jones ✠ Cedar Rapids, Iowa; State University of Iowa College of Medicine, Iowa City, 1893; University of Pennsylvania Department of Medicine, Philadelphia, 1894; past-president of the Linn County Medical Society; a director of the Welch-Cook-Beals Company and the Iowa Electric Light and Power Company; died March 11, aged 85, of heart disease.

Nichols, George Roscoe, Chicago; Chicago College of Medicine and Surgery, 1911; served on the staff of the Evangelical Hospital; member of the Industrial Medical Association; died in Miami, Fla., April 6, aged 68, of myocardial infarction.

Nippert, Edward Frederick ✠ Los Angeles; Miami Medical College, Cincinnati, 1902; in 1952 councilor of the Los Angeles County Medical Society; member of the American Academy of General Practice; formerly assistant professor of pediatrics, College of Medical Evangelists; on the staff of the Hollywood Presbyterian Hospital–Olmsted Memorial, where he died March 22, aged 77, of cardiovascular arteriosclerosis.

Norris, Clarence Oliver ✠ Arcola, Ill.; Bennett Medical College, Chicago, 1915; died March 13, aged 73, of renal failure following third degree burns received in a fire that destroyed his home in Arthur.

Peehn, Frederick G. ✠ Sturtevant, Wis.; Milwaukee Medical College, 1900; on the staffs of St. Mary's Hospital and St. Luke's Hospital, Racine, where he died March 24, aged 81, of heart disease.

Phillips, William Robert ✠ Rushville, Ind.; Kentucky School of Medicine, Louisville, 1905; died in the Veterans Administration Hospital, Indianapolis, March 3, aged 77, of pneumonia.

Purlenky, George Philip ✠ St. Helena, Calif.; Medical Department of the University of California, San Francisco, 1901; member of the American Academy of General Practice; died in the Parks Victory Memorial Hospital, Napa, March 26, aged 75, of chronic myocarditis and arteriosclerosis.

Rateau, Jules Brunet ✠ New Orleans; Tulane University of Louisiana School of Medicine, New Orleans, 1920; member of the American Academy of General Practice; on the staff of the Southern Baptist Hospital; died March 14, aged 62, of heart disease.

Reid, Warren Harrill, Pontotoc, Miss.; Louisville (Ky.) Medical College, 1906; died in St. Louis Feb. 27, aged 86, of a fractured hip received in a fall.

Wiley, Maurice G., The Weirs, N. H.; Southern Homeopathic Medical College, Baltimore, 1894; served as a member of the state legislature and senate; on the staff of the Laconia (N. H.) Hospital, where he died April 12, aged 85, of coronary thrombosis.

Williams, John Drewey ✠ Guilford, N. C.; University of Tennessee Medical Department, Nashville, 1894; died in Greensboro March 7, aged 88, of cancer.

Zide, William ✠ Brooklyn, N. Y.; New York Homeopathic Medical College and Flower Hospital, New York City, 1923; on the staff of the Maimonides Hospital; died March 26, aged 57, of coronary thrombosis.

FOREIGN LETTERS

FRANCE

Cirrhosis with Ascites.—Caroli and Pequignot (*Méd. et hyg.* 14:117, 1956) studied 46 patients with ascitic cirrhosis and divided them in two major groups: the sthenic, whose appetite and vitality is not decreased in spite of the presence of massive edema, and the asthenic, who have intractable anorexia and physical and psychic adynamia. The sthenic patient should receive a high caloric diet rich in proteins but with minimal sodium content. The ascitic fluid should be drawn off frequently in small amounts. The asthenic patient should not be so treated before restoration of his appetite and general condition have been accomplished. A diet of liquid or soft foods will be necessary in case of extreme anorexia. Chloride-free milk may be given in increasing doses. Such adjuvants as plasma, sodium-poor albumin, and deplasmatized erythrocytes are of value. Prednisone may improve the appetite and general condition and may stimulate excretion of sodium and water. Some of the asthenic patients responded well to treatment and were converted into sthenic types, but such complications as intestinal hemorrhage and coma caused by mineral imbalance remained a hazard. In this series, 24 patients were discharged improved and were in good health when seen six months later; 4 of these were able to discontinue sodium restriction a few months after the end of treatment. Eight patients left the hospital against medical advice and were not followed up. The remaining 14 died in the hospital or during the six months following hospitalization, 4 of irreversible cachexia, 4 from hemorrhage of the digestive tract, one in hepatic coma, and 5 under unknown circumstances.

Postcommissurotomy Syndrome.—B. Coblentz and his co-workers reported to a meeting of the Medical Society of the Hospitals of Paris that about 10% of patients surviving mitral commissurotomy have a syndrome consisting of left scapulothoracic pain and, often, generalized joint pains accompanied by fever. Nonspecific signs of inflammation are present, but there is no cardiac localization. The syndrome is benign and self-limited, though relapses tend to occur. Its occurrence seems to have no effect on the results of commissurotomy. The cause of the syndrome is not understood. It would appear that a reactivation of rheumatic fever is not involved, but rather some sort of reaction syndrome. Treatment consists of giving antibiotics and salicylates. Use of hormones is not needed. Routine prophylaxis will diminish the incidence of the postcommissurotomy syndrome.

Gamma Globulin in Prophylaxis of Measles.—R. Debre and his co-workers reported in *Presse médicale* (64:667, 1956) the results obtained in 1,180 children who were given gamma globulin for the prevention of measles. In 1,061 children (89.92%) there was complete protection; in 96 (8.13%) a mild attack of measles developed; and in 23 (1.95%) there was no protection. Some of the failures may have been caused by giving the gamma globulin too late or by giving too little (especially in the presence of a widespread epidemic or of exposure of children in poor general condition, or in the event of measles occurring within less than three weeks following the injection of gamma globulin; this could have been prevented by giving a second dose on about the 15th day following the first injection).

PERU

Mitral Commissurotomy.—Dr. Marino Molina Scippa of the Worker's Hospital of Lima reported to the 10th Peruvian Congress of Surgery in March that mitral commissurotomy alone, either manual or instrumental, is only a part of the whole surgical approach to the treatment of mitral stenosis. To obtain the best results, not only must the stenosed valve be widened, but also all the other lesions that may disturb the normal valvular function, such as secondary stenosis, should be discovered and corrected if possible. With the patient in the right lateral decubitus position, the speaker performs a left periscapular posterolateral thoracotomy along the entire fourth intercostal space, entering the pleural cavity through it and leaving the ribs intact. Dissection of the radial artery was performed only in the first few patients operated on, as it is not free of dangers, and in no case was it necessary to resort to intra-arterial transfusion. An intravenous drip of procaine hydrochloride is no longer used and procaine is injected neither inside the pericardium nor into the myocardium at the base of the auricle. When the approach to the auricle is through its apex, a purse-string suture is not used, since it is not an important means of controlling hemorrhage; no hemorrhages have occurred in the speaker's series of 37 patients. When thrombosis of the auricle is suspected, clamps on the auricular apex are not applied and the auricle is opened, the hemorrhage being controlled only by means of a delicate digital pressure. The thrombi of the auricle and the auricular apex are not removed, and the only aim is to make a way by means of a very careful detaching digital maneuver, the advance of the finger into the auricular cavity being frequently interrupted in order to allow the blood to flow out of the auricle, carrying along the fragments of the thrombi loosened by the digital maneuver. No temporary interruption of the cerebral blood flow is attempted. Either digital or instrumental commissurotomy may be used. More often both procedures are used. As much of the auricular apex as possible is removed.

Twelve of the patients had auricular fibrillation at the time of operation, but only five of these had intra-auricular thrombi. In no patient with sinus rhythm were thrombi found at operation. Eleven patients were found to have valvular calcifications and they were found equally in patients with or without auricular fibrillation. Twenty patients had a mitral aperture of less than 1 sq. cm. Of the 11 patients who had an associated mitral insufficiency, the valvuloplasty corrected this lesion in 3 of the 7 whose insufficiency was mild and in none of the 4 whose insufficiency was severe. In five of the patients the mitral stenosis was both commissural and tendinous in nature. Digital commissurotomy was performed in 30 patients and both digital and instrumental in 7, but the speaker believes that as more experience is gained in the use of the commissurotome a greater number of patients will undergo instrumental valvuloplasty. Postoperative fever was the most frequent immediate complication and was observed in nine patients. Acute edema of the lung, bronchial asthma, congestive cardiac failure, ventricular fibrillation, postoperative shock, supranodal paroxysmal tachycardia, infectious mononucleosis, and cerebral embolism were also observed, but far less frequently. No operative or immediate postoperative deaths occurred in this series. General results were excellent in 24 patients, good in 6, fair in 5, and poor in 2 who died within a year after the operation.

Sterility.—Dr. Ascenzo Cabello performed endometrial biopsies on 44 sterile wives and found that 12 of them showed anovulatory cycles (*Revista peruana de obstetricia*, vol. 3, no. 2, 1955). He irradiated the hypophysis and the ovaries in 16 women and the ovaries alone in one, using 80 r to the hypophysis and 80 to 100 r to the ovaries once a week for three weeks. Sexual abstinence for a minimum of 60 days was prescribed. Following this treatment, of the six women of the group who had oligomenorrhea, four began to have regular menses, one had polymenorrhea, and the remainder failed to respond to the therapy. Of two patients with first-degree amenorrhea, one responded fairly well to this treatment and the other required a second course of irradiation 10 months later and then had normal menses. Six of the treated women conceived within the first three months after therapy and were able to give birth to normal full-term infants. Five of these had had anovulatory cycles.

The items in these letters are contributed by regular correspondents in the various foreign countries.

Hypothalamus and Pregnancy.—Hypothalamic centers can be disturbed not only by infectious processes but by toxic conditions, and so in pregnancy toxins of ovular origin, by acting on the hypothalamus through the blood, would account for the so-called vagosympathetic symptoms occurring throughout the pregnancy, according to Dr. L. Castro Molina (*Revista peruana de obstetricia*, vol. 3, no. 2, 1955). Qualitative changes in appetite arising in pregnancy would have a similar pathogenesis. The author believes that such ovular toxins, although not yet isolated and imperfectly understood, are the cause of the toxemias of pregnancy. Other possible factors are frustrations, heredity, and individual predisposition.

UNITED KINGDOM

Armed Forces Medical Services.—In December, 1953, the Minister of Defense appointed a special committee to discover why the medical service of the Armed Forces was unable to recruit the required number of physicians. The committee's report, now published, indicates that only 28% of the medical officers in the Army and 34.5% of those in the Air Force hold regular commissions. The position with regard to specialists is even more disturbing. The Army requires 275 senior specialists and has only 180, and the Air Force requires 140 and has only 50. The root of the trouble lies in the fact that the National Health Service offers a newly qualified physician a well-paid and settled medical career in England, in an area largely of his own choice. In addition, it provides a pension and a lump sum gratuity at age 65 and various ancillary benefits (such as disability and widow's pensions). Thus, the National Health Service now provides the security and settled prospects that had in the past been important attractions of a service career. Further, the National Health Service Act, by prohibiting the sale of practices, makes it extremely difficult for a retired service medical officer to obtain a practice and so accentuates the hardship caused him by retirement at age 57 or even earlier.

The committee rejects the suggestion that the medical services of the Army, Navy, and Air Force should be merged into one common organization. This would not result in greater efficiency but would rather result in administrative chaos. The loyalty of the officer to his particular service is a vital element in maintaining morale and therefore efficiency. On the other hand, there is some room for closer cooperation between the three services, particularly at hospital level by the joint use of specialist hospitals. Integration of service hospitals into the National Health Service is not recommended. The establishment by the services of a specialist hospital for traumatic surgery should be considered. A central research institute is not recommended, but other methods of collaboration on research programs should be developed. The employment of paid civilian consultants, in place of service specialists, by the Army should be discontinued as soon as possible. The committee rejects the suggestion of the Medical Women's Federation that conscription for national service should be extended to women physicians but hopes that more women will seek a medical career in the Armed Forces.

The Army, Navy, and Air Force are urged to make every effort to raise the professional standing of their medical services and to increase the scope of professional work available to medical officers. There should be a separate specialist section, both in the Army and the Air Force, in which officers would continue in their specialty throughout their career. It would not be appropriate to introduce a specialist section into the Navy, but time spent at sea by specialists should be reduced to a minimum. Junior medical officers with a leaning toward research should be encouraged to engage in it. Medical officers should normally have an expectation of staying in a particular assignment for at least three years. It is also considered that there is further scope for the employment of nonmedical officers in junior staff assignments in the Army. Increases in pay are recommended for all ranks from major to brigadier (and their equivalents). A regular medical officer being retired for age should be offered employment in a civilian capacity by the Armed Forces if competent and fit, up to the age of 65.

Commission on Marriage and Divorce.—The Royal Commission on Marriage and Divorce, which was set up in 1951, has published its report. Among the suggested new grounds for divorce is acceptance by a wife of artificial insemination by a donor without her husband's consent. It is also recommended that consent to a wife's artificial insemination, whether with semen from the husband or a donor, should be a bar to proceedings by either spouse for annulment on the grounds of impotence. In considering insanity, it is recommended that for divorce it should still be necessary to prove that the spouse is incurably unsound of mind and has been continuously under care and treatment for a period of at least five years immediately preceding the petitioning, but new definitions are proposed for the terms "care and treatment" and "continuously." Insanity should no longer be a good defense against a charge of cruelty in divorce proceedings. It is recommended that sodomy and bestiality should be grounds of divorce or legal separation at the instance of either husband or wife. Sodomy is so defined as to include the act when committed by a husband on his wife's person. The commission rejects the suggestion that lesbianism should be a specific ground for divorce on the grounds that, unlike sodomy, the word is used to describe the whole range of female homosexuality and does not refer to a specific act, because of the difficulty of proof, and because in some circumstances lesbianism is already held in divorce proceedings to amount to cruelty. Conviction of a spouse of a sexual offense against a child of the marriage, or a stepchild, should not itself constitute a ground of divorce, but only for an application for a legal separation.

Dodging Responsibility.—An annotation in *Lancet* (**1**:342, 1956) draws attention to the excessive lengths to which some hospitals are going in an attempt to protect themselves from charges of negligence. The increase in the number of such cases in the courts is causing widespread concern, but the enhanced risk of law suits should not lead hospitals to evade their responsibilities. The following notice was received by a patient who was about to enter a hospital for an "interval" appendectomy: "There has been an outbreak of staphylococcal infection at the ——— General Hospital. The outbreak is responding to the measures taken by the Hospital Management Committee to limit the spread of infection. However, it is felt that, where practicable, patients should be aware before agreeing to come into the Hospital that there is some increased risk of infection, and that the measures instituted remain in force until conditions return to normal. I have read the statement above and agree to enter the Hospital. Signed. . . ." According to the annotation it was for the hospital authorities, and not the patient, to decide whether it was safe for him to enter the hospital for his operation. To require a patient to make up his own mind on an epidemiological issue is no way to retain confidence in the hospital service; and to call for his signature on an ill-comprehended legalistic form is more likely to promote than to allay litigiousness.

Mortality Caused by Smog.—The dense smog that enveloped London on Jan. 4 to 6 this year was responsible for about 1,000 deaths, according to Dr. W. P. D. Logan (*Brit. M. J.* **1**:722, 1956). This figure is based on the number of deaths registered in the Greater London area in the two weeks ending Jan. 7 and 14 (4,916) compared with the number of deaths registered in the two weeks immediately preceding (3,942). Confirmatory evidence is obtained from a comparison of mortality in the first two weeks in 1956 with the annual average mortality in corresponding weeks in the period 1948-1954 (excluding 1951 and 1953, in which epidemics of influenza occurred), which was 3,934. As there was no epidemic influenza at the time, and as the smog was not accompanied by excessive cold, it is assumed that most of these additional deaths were due to the smog. Details are not available for the whole of the London area, but, in the case of central London, the increase in deaths was relatively greatest (67%) among newborn infants, but in numbers of deaths by far the greatest increase was among elderly persons. Reported deaths from bronchitis showed the greatest increase (123%), from 169 in the last two weeks of December to 377 in the first two weeks of January.

CORRESPONDENCE

THE AUTOPSY

To the Editor:—In the March 31 issue of THE JOURNAL there appeared a guest editorial by Dr. Isaac Starr. Dr. Starr very ably presents the tremendous impact that the "German School" of pathology had on American medicine. During this period 19th century vagaries were swept away en masse amid enthusiasm that quite probably will not be duplicated. This school of pathology was largely a school of "gross" pathology, and careful microscopic examination was only randomly applied to the material. I do not wish to belittle the great gains of this period, although we have become aware of how prevalent certain errors must have been. It did offer one advantage that at times makes a present-day pathologist wistful. The *Geheimrat* never had to say that what he thought was a peptic ulcer actually was a carcinoma as proved by the later sections. He was not subject to contradiction and enjoyed a reputation of infinite wisdom. It is probable that today we have lost a little in the fine observation of gross material, just as the art of physical diagnosis has declined from its peak earlier in the century. However, what has been lost has been more than made up in accuracy by the careful consideration of the clinical findings, laboratory findings, and the gross and microscopic findings. The end-result is much closer to the unobtainable goal of complete truth.

The purpose of an autopsy is not experimentation. It is primarily to provide an accurate check on the diagnostic accuracy of the clinical staff and to determine the end-results of therapeutic attempts as regards both their effect on the disease treated and their side-effects on the organism as a whole. The invaluable and inseparable product of this function is the teaching value not only to students but to the entire clinical staff. As a point of curiosity I reviewed 200 consecutive autopsies done during the early months of 1955. I divided these into two groups. In the first group were placed all cases in which the clinical diagnoses were essentially confirmed by the autopsy findings inasmuch as the major events leading to the patient's death were concerned. Thus, if cirrhosis or a carcinoma of the intestine or kidney was missed clinically, the case was still placed in this group, providing the missed diagnoses were not lesions in the main stream of events. In the second group were placed cases of major disparity, in which the clinical diagnosis and therapeutic attempts were far wide of the mark. Examples of the type of case in the second group are a case of lobar pneumonia clinically diagnosed as hepatic coma secondary to metastatic liver disease; unexplained renal failure shown at postmortem examination to be a case of multiple myeloma; and a malignant melanoma of the skin of the tibial region with cerebral metastases diagnosed clinically as cerebrovascular accident. Of the 200 cases, 85% fell in the group of reasonable agreement but 29 cases, or 15%, fell in the latter group. In 11 of these 29 cases the unexpected major finding was chiefly made through microscopic examination. The professor of pathology of my institution a few years ago did a similar survey, using perhaps harsher criteria, in a neighboring hospital. He tells me that in only 30% were the clinical diagnoses really accurate. There still appears to be a need for the primary function of the autopsy.

I do not believe that clinicians are no longer interested in autopsies. This may be true in individual cases but does not reflect the views of the staff, most of whom have appeared in person if the case has been puzzling or have been keenly interested in the outcome as reported to them. In our hospital a weekly session is held by the professor of medicine at which the more interesting cases of deaths on the medical service are presented. All of the surgical deaths are discussed with the entire surgical staff at a monthly session moderated by the professor of surgery. All neonatal deaths are considered by the pediatricians and obstetricians. All of this is in addition to the pediatric, surgical, and medical clinicopathological conferences. Many advances in our concepts of disease have come about through the combination of experimental, clinical, and morphological disciplines. Morphology remains an essential member of this triad. One should consider the fact that the essential lesion of congenital megacolon was brought to general attention only in 1948 by Whitehouse and Kernohan. Pathology has no quarrel with other medical disciplines, and a little reflection brings to mind numerous such examples of the results achieved through cooperative teamwork between the various specialties. Certainly I am not prepared to write off the morphological contributions of the autopsy as a thing of the past.

Dr. Starr's statement that autopsy records have not been of value or useful in research is not in accord with the facts. Our entire modern concept of the life history of various types of malignancy has evolved through the careful study of surgical and autopsy material. No paper on neoplasia in series in which deaths have occurred would be considered valid unless the autopsy as well as the surgical material were carefully reexamined. The same may be said for the study of any frequently lethal disease. The basic difficulty is, I believe, not that Dr. Starr's views are necessarily entirely wrong but that he is looking at the postmortem examination purely from the viewpoint of an individual whose interests are in cardiac physiology. The pathologist cannot afford such a narrow view. He must satisfy the family, the clinicians, and his responsibility for seeing to it that accurate records and material are available for future use in problems he has no way of predicting. The pathologist is in sympathy with any suggestion for the maximum use of any autopsy examination. We are sympathetic to any research project that stays within the bounds of autopsy common law. For instance, the thoracic surgeons in our institution have available to them and make active use of cardiac material to work out proposed procedures. Dr. Starr's own recent research was made possible through our cooperation. It must not be forgotten, however, that the body is the legal property not of pathologist or clinician but of the next of kin. It must further be remembered that the autopsy examination is hedged about with restrictions and that any autopsy is a compromise between the ideal examination and the restrictions set by civil and common law and the family.

H. T. ENTERLINE, M.D.
Associate Professor in Surgical Pathology
University of Pennsylvania
Philadelphia 4.

To the Editor:—The discussion about the present and the future of the autopsy that has appeared in THE JOURNAL was started by a signed editorial (March 31, page 1144) that suggested that too many autopsies were studied too little and with insufficient imagination. At the same time the author described the fashion in which he had adapted a clinical procedure of very doubtful significance to an autopsy study. The retort to the autopsy editorial was rapid and more than adequate. A distinguished group, largely made up of senior pathologists, explained and recounted several solid reasons for which an autopsy must be done whenever possible if medicine is to continue its progress. One important justification for the autopsy was not stated. Overlooked was the philosophical fact of the autopsy representing the "end-of-the-line" position. The chain of medical care, which begins with the delivery of the patient by an obstetrician and continues in the care of childhood diseases by the pediatrician and the efforts of the general practitioner and the various specialists who look after the patient at any time during his or her life, comes to an end at the postmortem table. It was not emphasized that at the

autopsy the "last chance" for resolving problems and doubts is presented to the medical profession and to the pathologist as its operating member. So, just as a part of the whole picture of medical care, and an important part, the autopsy is more than justifiable.

At the same time it is obvious that, apart from the value to the individual performing the autopsy and to the physician in charge of the case, a considerable amount of effort may be wasted in the performance of a detailed autopsy in every case. It would be quite as unfair to say that every individual autopsy had wide scientific merit as it would be to say that no autopsy had any scientific merit. Some autopsies are valuable, and all autopsies are of some value. Why then not a modern study of every autopsy? It is not lack of modern techniques or of knowledge about them that handicaps the pathologist. Actually, the problem that faces him is not a dearth of techniques but a plethora. The methodology of histochemistry is now large and growing. Electron microscopy is opening new windows and enlarging old ones. Cell fractionation and enzyme techniques are too numerous to count. As others have indicated, autopsies have increased in number—in my own school from 350 to nearly 600 in three years. It is impossible under our present arrangement to apply all the available techniques for the study of the cells and tissues to all the autopsies that are required to be done.

Dr. Angrist, in THE JOURNAL, May 26, page 303, gives his solution to the problem of the service autopsy work load of the academic pathologist—a streamlining arrangement that is a matter of efficient organization and utilization of material rather than a major modernization of methodology. Some cases are obvious grossly and receive less study than the more complicated cases. A number of cases are set up for particular study, the project autopsy.

I believe it is time for a major reorganization and recasting of the autopsy as a medical educational procedure, at both the undergraduate and the postgraduate levels. For many years the clinical services have selected cases for admission and study apart from the seriousness of the illness of the individuals concerned. While I do not believe that any hospital has chosen to turn away a sick patient for whom there was thought to be any possibility of help, and where space was available, there has certainly been a clinical selection of cases for treatment and study. I think that the pathology department should take the same attitude, that some cases are worth more study than others, while discharging insofar as possible their responsibility for the final step in the medical care program. The establishment of routine and research categories of autopsies will allow this selection of material. I suspect that this is the middle way—case selection and the setting up of research autopsies. This is being initiated at the University of Alabama Medical Center. A few autopsies, perhaps 5% of the total, will be studied by these more modern techniques of histochemistry, electron microscopy, and enzymology as far as possible. Our resident pathologists and pathologists-in-training participating in this work will learn and apply the research techniques that they have had to go to animal experimentation to learn in the past. We hope to select primarily a few categories of cases for special study and to add others as they come to autopsy, taking advantage of the opportunities presented by potentially valuable cases. These research autopsies will be made possible by the release of time from the routine autopsies that make up about 95% of the group. The routine autopsy will include a careful dissection and a diagrammatic description of autopsy findings, a few routine sections put through the Autechnicon, and quick "finishing" very much like the routine surgical. At any point a routine autopsy can be made a research autopsy if the tissues have not yet been put into fixatives. Since so many of our modern techniques require no fixation or very special fixation, the decision has to be made quite early in the examination of the body.

I believe that the return of some of the autopsies to a research level will save the imaginative pathologist-in-training from flight away from the autopsy and a transfer of interest mainly to experimental pathology. There is certainly a place and even a necessity for animal experimentation, but not as the sole activity for an academic department of pathology with surgical and autopsy pathology opportunities. Daily it is more and more obvious that "pigs is pigs" when an attempt is made to study any structure or function in several species and compare it with the human. Despite the broad biological outlines to which diseases conform, there is a necessary major step of translation of results from animal experimentation to the human. This is not easy with our present ignorance of fundamental comparative physiology and comparative biochemistry. With the research recentered on the human, it may well be that our progress in the understanding of human disease will again be accelerated, even though more labor, organization, and preparation are entailed in taking advantage of autopsy material than the planned, but frequently irrelevant, animal experiment.

A final benefit may come from the setting up of routine and research autopsies. The performance of routine autopsies can be carried out by a team made up of a resident pathologist and two students, with the medical students studying the cases under the supervision of members of the resident staff. The dissections will permit the understanding of human anatomy in a fashion that is not possible from the desiccated cadavers of the anatomy rooms. Fresh autopsy cases will be studied by the student under competent resident supervision. Clinical-pathological correlations that he has had to make as it were secondhand, from preserved material, will now become very much more obvious and pertinent in the specific case. Pathology will be reemphasized to the students as a matter affecting individual people, the patients, rather than as some abstract body of knowledge that it is necessary to acquire to enter the clinical wards. In time, actually in a very few years, the resident staff in the clinical services will have members who are capable of assisting intelligently in the autopsy study of patients who have been under their medical care.

J. F. A. MCMANUS, M.D.
Professor and Chairman
Department of Pathology
The University of Alabama Medical Center
Birmingham 3, Ala.

To the Editor:—In a guest editorial, "Potential Values of the Autopsy Today" (*J. A. M. A.* **160:**1144 [March 31] 1956), Dr. Isaac Starr expressed his views on autopsies and autopsy procedures, together with some suggestions that he thought might remedy the faults he believes to exist. In the Correspondence section of May 12, six letters of reply were printed. I feel it incumbent upon me to respond to some of the points raised in these publications. In the first place, I would like to state emphatically that the quality of service given to our hospital by the pathologists in charge is excellent and, indeed, is now better than it was when done under the direct supervision of the department of academic pathology in the medical school. This is not only my own opinion; it is shared by the clinicians for whom the service is rendered. Secondly, as the professor of pathology in this institution, I would like to say that I have had long and rigorous training in morphology, have performed hundreds of autopsies, and have examined my share of biopsy specimens. I am certified by the American Board of Pathology. I am also an experimental pathologist, and any contributions I have been able to make in advancing our knowledge of neoplasia have depended largely upon a sound basis of morphology. I see to it also that our second-year medical students not only witness but participate in an average of 15 autopsies and that they study fresh gross specimens daily in addition to their microscopic slides. They also take a course in experimental pathology. I am reluctant, therefore, to accept the criticism that I am an experimental pathologist without interest in morphology. As Dr. Klemperer indicates in his letter, morphology is the basis of pathology, but pathology must not be content to end with description and classification. Certainly no one today denies the pathologist the right to use whatever means he may need in order to further our knowledge of disease. If I choose to use the electron microscope and the spectrophotometer more fre-

quently in my research than I do the light microscope, I cannot believe that this displaces me from the ranks of my contemporaries in the field of pathology.

The relationships between myself and my staff and our hospital pathologists are happily harmonious, with mutual respect and understanding of the problems of all concerned. We all meet together in our conferences for the discussion of interesting autopsy and biopsy material. The present arrangement, whereby the pathological work of the hospital is carried out by pathologists who devote their time chiefly to those functions while others concentrate more on research and teaching, has enabled us to do a better job in all three areas. Every member of the entire staff has had a long and thorough training in morphology and is either already certified by the American Board of Pathology or is busily engaged in fulfilling his requirements therefor. In previous years it came about that the hospital pathologists in our institution were employed by and were members of the departments of surgery and medicine. Realizing that this was not an ideal arrangement from the standpoint of the hospital pathologists, the department of pathology, or the clinical departments, we were in the process of transferring the hospital pathologists to the department of pathology, where they rightly belong, a good while before the publication of Dr. Starr's editorial. I should not have felt it necessary to write this note were it not for the fact that Dr. Starr's general comments were interpreted as reflecting upon the quality of personnel and their ability to conduct the service functions in our hospital, which I know Dr. Starr did not intend to do. The truth of the matter is that these men are excellently trained pathologists performing an excellent job.

Dr. Starr, I believe, has emphasized one very real problem. When academic departments in medical schools, often with insufficient staff members, are required to render service functions in their teaching hospital, as well as to assume responsibility for all teaching, residency training, clinicopathological conferences, and research, it is inevitable that something suffers—and this usually turns out to be teaching and research, since the urgency of service takes precedence. Too often, as well, the department becomes economically dependent upon its service functions, again tending to relegate teaching and research to subsidiary roles. The problem has been handled in our institution as it has in many others. Those who choose to specialize in hospital pathology carry on these functions as their primary endeavor. Those who are more inclined toward teaching and research concentrate their major efforts in these directions. Fortunately we have a large staff of competent people in both categories and have no difficulty in finding fine young recruits in both fields.

I think that the schism that exists today in the ranks of pathologists had its origins years ago. Pathology has become divided into two facets: one that serves primarily in a diagnostic service capacity to clinical medicine and another that is primarily concerned with the advancement of our knowledge of disease by experimental methods. At one time it was not too difficult for one man to encompass both facets. Today, the tremendous increase in the body of knowledge in pathology, together with the growth and development of clinical laboratory tests and the acquisition of many new and often complicated techniques, has made it well nigh impossible for one man to have the time and capacity to achieve excellence in both areas. When, in addition, a conscientious effort is made to design and to execute the best conceivable teaching program in pathology for medical students, it is a rare individual indeed who is capable of bridging the entire spectrum completely. I have the impression that thus far the hospital pathologists, in general, have succeeded in doing a better job than have their brethren in the academic field. On the latter group must largely depend the growth and vitality of pathology as a science, and, as in all other sciences, this must depend largely upon the experimental approach, with utilization of the best techniques available. Upon this group also must chiefly rest the responsibility of teaching our medical students and, of no less importance, the recruitment and training of competent young men to keep our science alive and healthy in the future. It is my opinion that, in these academic responsibilities of experimentation and teaching, pathology has not achieved success to the same degree it has attained in fulfilling its service functions. The reason for this, again in my opinion, has been the adherence to the old system whereby a few men are expected to handle all of the service, all of the teaching, and all of the research. Only when pathology departments are adequately and competently staffed with teachers and investigators, as well as with hospital pathologists, can pathology flourish as a science and at the same time fulfill its service functions.

Few of the leading anatomists of today are content to expend their major efforts dissecting a cadaver. They are forging ahead with the general advancement of science on all fronts and are utilizing newly acquired techniques for studying biological phenomena. Too many pathologists in our academic institutions have tended to rest content with their autopsies and microscopic sections and to allow themselves to be inundated by functions that properly belong to the hospital pathologist. It is most encouraging that recently there has been an increasing awareness among our medical school faculties and administrative officers of these very problems and that efforts are being made to find capable leaders in the fields of research and medical education to fill the chairs of pathology in our institutions. The autopsy never has lost, nor will it ever lose, its value as a check on clinical diagnosis, as a source of material for investigation, as a training ground for the student of medicine at all levels and especially in the basic training of young pathologists, and as a source of new problems and new knowledge in our study of disease in man.

Dale R. Coman, M.D.
Professor of Pathology and Chairman
of the Department of Pathology
University of Pennsylvania
Philadelphia 4.

AUSTRALIAN UROLOGICAL MEETING

To the Editor:—The Urological Society of Australasia proposes to hold a meeting in Sydney during the week commencing Monday, Nov. 12, 1956. This meeting will occupy some days of the week preceding the opening of the Olympic Games in Melbourne. For your information and the information of any American urologists who may contemplate attending the urologic meeting in Sydney and visiting Melbourne for the games, I would add that the two cities are separated by about two hours' flying time. American urologists who are willing to contribute to the program of the Sydney meeting may get in touch with me, after which an official invitation from my society will be sent.

Keith Kirkland, M.D.
137 MacQuarie St.
Sydney, Australia.

DEFIBRILLATION

To the Editor:—While I do not wish to detract from the brilliant result obtained by Dr. Claude Beck and his associates in resuscitating the patient who collapsed and appeared dead, as described in The Journal, June 2, page 434, I must take issue with the title of the article. By definition, death is irreversible, so that the mere fact that the patient was revived indicates that he was not dead. Even if we define death as cessation of heart beat and respiration, this patient was not dead, since in the case report the authors state "it was obvious that fibrillation was occurring in the ventricles." This patient was not dead, he was apparently dead. Furthermore, I wonder why he was permitted to leave the hospital if the clinical picture and the electrocardiogram were "consistent with early posterolateral myocardial infarction." Should he not have at least been hospitalized?

Meyer Friedenson, M.D.
230 Central Park West
New York 24.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Malignant Argentaffinoma Associated with Cardiovascular Abnormalities. W. R. Eyler, H. Tesluk and E. H. Drake. New England J. Med. **254**:555-559 (March 22) 1956 [Boston].

The authors report a case of malignant argentaffinoma in a 45-year-old man with facial telangiectasia and cyanosis and the development of murmurs of tricuspid insufficiency and pulmonic stenosis in the course of a four-year follow-up after a laparotomy performed because of intestinal obstruction caused by a widespread carcinoid tumor. The tumor could not be removed, but an enteroenterostomy was done. The tumor had invaded the regional lymph nodes, peritoneum, and liver. Physical and radiological examination of the heart showed progressive enlargement of the right atrium and ventricle and established that the cardiac abnormality was acquired during the follow-up period after the laparotomy. There was nothing to suggest any intercurrent disease, such as rheumatic fever, that could have been responsible. An angiocardiogram and cardiac catheterization both indicated pulmonary stenosis of the valvular type. Four x-ray treatments with 300 r, measured in air, for a total of 1,200 r, were given with a 10-by-10-cm. portal directed at the cardiac-valve area in the belief that some of the valvular disturbances might be the result of metastatic carcinoid tumor to the heart. Nevertheless, the patient's condition deteriorated steadily, and he died.

Autopsy showed connective-tissue thickening of the endocardium of the right atrium and of the pulmonary valve with stenosis of the valve. An argentaffinoma of quite typical appearance was scattered throughout the liver. A few small nodules were also observed in the myocardium, and a microscopic focus was found in the posterior pituitary gland. The liver substance showed marked fatty metamorphosis. A few smaller arteries in the lungs showed increased intimal thickening, but in general no abnormalities were observed in vessels anywhere else. There seems to be little doubt that the mediator of the effect of the carcinoid on the heart is serotonin or its metabolites. This process is similar to fetal endocardial fibroelastosis in that both lesions show the primary changes restricted to the endocardium, with an increase in thickness, and in both the process can involve the valves, with the production of stenosis. Fibroelastosis most commonly involves the left side of the heart, whereas no lesions on the left side have been reported in association with malignant argentaffinoma. This lesion also differs from fibroelastosis in that there is no evidence of incorporation of elastic tissue in the plaques. In fibroelastosis, as described by Craig, the entire architecture of the valve is involved with fibrous thickening and hyalinization, whereas in the authors' patient the valve was distorted by endocardial change only.

Reserpine-Hydralazine Combination Therapy of Hypertensive Disease, with Hydralazine in Doses Generally Below the "Toxic Range." R. E. Lee, A. M. Seligmann, D. Goebel and others. Ann. Int. Med. **44**:456-465 (March) 1956 [Lancaster, Pa.].

Of 25 patients who had had sustained hypertension above 150/100 mm. Hg for an average period of three and one-half years, 12 (group 1) were given 0.5 mg. of reserpine daily in the morning for three weeks, 0.5 mg. morning and evening for the next three weeks, and 0.5 mg. three times daily for the final six weeks. The remaining 13 patients (group 2) were given 0.1 mg. of reserpine and 25 mg. of hydralazine three times daily for three weeks, 0.2 mg. of reserpine and 50 mg. of hydralazine three times daily for the second three weeks, 0.3 mg. of reserpine and 75 mg. of hydralazine three times daily for the next three weeks, and 0.4 mg. of reserpine and 100 mg. of hydralazine three times daily for the final three weeks. In addition to the 12-week course of test medication, each patient also had a 12-week course of placebo therapy, with a three-week interval between the two courses during which neither placebos nor test drugs were given. The nature of the tablets dispensed to all patients was known neither to physician nor to patient, placebo and test tablets being identical in appearance.

The initial average blood pressure of the patients treated with reserpine was 192/112 mm. Hg, and the final average blood pressure in this group was 172/97 mm. Hg. Thus the average systolic blood pressure was reduced by 20 mm. Hg and the diastolic blood pressure by 15 mm. Hg with reserpine alone. A regression of fundal vascular abnormalities was not observed during the use of reserpine. The usual side-effects of reserpine were observed frequently. The initial average blood pressure of the patients treated with reserpine and hydralazine was 209/118 mm. Hg, and the final average blood pressure in this group was 165/93 mm. Hg. Thus the average systolic blood pressure was reduced by 44 mm. Hg and the average diastolic pressure was reduced by 25 mm. Hg. During the period of active therapy, systolic blood pressure reductions greater than 40 mm. Hg occurred in 7 of the 13 patients receiving combined treatment with reserpine and hydralazine, and reductions greater than 25 mm. Hg occurred in 10 more of these patients. The diastolic blood pressure dropped more than 30 mm. Hg in five patients and more than 20 mm. Hg in nine patients. Hydralazine in daily doses of 300 mg. or less, when combined with reserpine, thus produced a significant hypotensive effect in a large number of patients with fixed hypertension of over three years' duration. Therapeutic effectiveness was attained without significant toxic effect. This is in accordance with the impression that the incidence of toxic effects is at least partly a function of dosage. If further study substantiates this belief, the range of usefulness of hydralazine may be greatly extended, provided the dosage is kept at moderate levels. Reserpine, which also produces a significant hypotensive effect in certain patients with fixed and prominent hypertension, may be tried initially in hypertensive patients, and hydralazine in moderate doses may be added later if indicated by the therapeutic response.

Preliminary Evaluation of a Non-Dietary Regimen for Reducing Cholesterol Levels in the Aged. N. Blumberg, M. W. Fischbach and L. Zisserman. J. Am. Geriatrics Soc. **4**:276-285 (March) 1956 [Baltimore].

Although the ultimate therapeutic value of reducing the circulating cholesterol content of the blood in elderly patients has not been clearly defined, evidence that high levels may be actively or potentially dangerous is constantly increasing. A lipotropic and nutrient tonic was administered to 25 geriatric patients at the Philadelphia Home for the Jewish Aged. After three months of therapy, an average decrease in serum cholesterol concentration of 27.5 mg. per 100 cc. was observed in the group. The average decrease in the 18 patients who responded favorably to treatment was 53.4 mg. per 100 cc. Concurrently with this response, the ratio of serum phospholipid to serum cholesterol improved in 17 of the 25 patients, the red blood cell count increased in 19, and the hemoglobin level rose in 17. Analyses of laboratory data showed the responses to be statistically significant in all categories. Subjective improvement, measured in terms of appetite, mood, and general sense of well-being, accompanied the objective responses in the majority of patients. Acceptance of the lipotropic preparation was excellent. Thus

---

The place of publication of the periodicals appears in brackets preceding each abstract.

Periodicals on file in the Library of the American Medical Association may be borrowed by members of the Association or its student organization and by individuals in continental United States or Canada who subscribe to its scientific periodicals. Requests for periodicals should be addressed "Library, American Medical Association." Periodical files cover 1947 to date only, and no photoduplication services are available. No charge is made to members, but the fee for others is 15 cents in stamps for each item. Only three periodicals may be borrowed at one time, and they must not be kept longer than five days. Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

this preparation, in addition to being a general tonic, should provide a means of reducing the blood cholesterol level and improving the ratio of serum phospholipid to serum cholesterol. Additional studies are necessary to assess the ultimate therapeutic value of the observed lipotropic effects of this preparation.

The Urinary Excretion Test in the Diagnosis of Addisonian Pernicious Anemia. S. F. Rabiner, H. C. Lichtman, J. Messite and others. Ann. Int. Med. **44:**437-445 (March) 1956 [Lancaster, Pa.].

To establish the diagnosis of pernicious anemia in remission is extremely difficult without a knowledge of the hematological findings previous to treatment. This is due to the fact that patients in remission, with or without the neurological evidences of combined systemic disease, do not present the classic syndrome of megaloblastic erythropoiesis, macrocytic normochromic anemia, leukopenia, and achlorhydria. The basic defect in Addisonian pernicious anemia is the deficiency of the intrinsic factor, a gastric enzyme that is essential for the optimal absorption in the intestine of orally ingested vitamin B_{12}. In remission, diagnosis depends on the demonstration of the absence of the intrinsic factor activity in the patient's gastric juice. A urinary excretion test, similar to that devised by Schilling, was performed in 36 patients with Addisonian pernicious anemia in remission and in 24 control persons including normal laboratory personnel and patients without pernicious anemia. The test required four days of complete urine collection. A 24-hour urine specimen collected on the first day served as a control. On the second day a dose of 2 mcg. of vitamin B_{12} tagged with radioactive cobalt (Co^{60}), containing 0.5 μc of Co^{60}, was given orally. Simultaneously the person subjected to the test received an intramuscular injection of 1,000 mcg. of nonradioactive vitamin B_{12}, the "flushing dose." On the third day another intramuscular injection of 1,000 mcg. of vitamin B_{12} was given (the "extra flush"). The last two days of the test were utilized as a guide to the maximal excretion capacity of the patient for radioactive vitamin B_{12}. Therefore, in addition to the oral administration of vitamin B_{12} tagged with Co^{60} and the intramuscular injection of nonradioactive B_{12}, a sample of intrinsic factor extract of known potency was given orally. This was followed, on the last day, by the intramuscular injection of 1,000 mcg. of nonradioactive vitamin B_{12}.

The urinary excretion of radioactive vitamin B_{12} in the 36 patients with Addisonian pernicious anemia was less than 3% of the orally administered dose in each instance. The mean excretion for this group was 0.85%, with a range of 0.05 to 3%. The mean excretion for the 24 normal adults was 13.3%, ranging between 5 and 34.2%. There was no overlapping in the results in these two groups. The urinary excretion test, therefore, can be used for differentiation of the control patients from those with Addisonian pernicious anemia. In Addisonian pernicious anemia the low urinary excretion of radioactive vitamin B_{12} indicates decreased absorption of vitamin B_{12} tagged with Co^{60}, caused by absent or diminished intrinsic factor activity. The described test for urinary excretion of radioactive vitamin B_{12} may be used as an aid in the diagnosis of Addisonian pernicious anemia in remission. The importance of second-day and occasionally third-day flushing doses of parenterally administered nonradioactive vitamin B_{12} for obtaining maximal excretion has been demonstrated.

Acute Leukemia in Adults: Treatment with the Combined Use of ACTH or Cortisone and 6 Mercaptopurine. J. W. Moynihan and L. Berman. J. Michigan M. Soc. **55:**309-314 (March) 1956 [St. Paul].

Corticotropin or cortisone and 6-mercaptopurine were used simultaneously in the treatment of five adult males with acute leukemia. The patients ranged in age from 19 to 46 years. With the exception of one patient, none had received antileukemia drugs or hormone therapy prior to admission. Two patients had received blood transfusions and antibiotics prior to admission. The 6-mercaptopurine was given by mouth in daily doses of 2.5 mg. per kilogram of body weight until a satisfactory remission or signs of severe toxic effects were observed. Corticotropin in the form of Acthar-gel was given intramuscularly in (divided) daily doses of 120 USP units, or cortisone was given orally in a dose of 300 mg. daily. Steroid therapy was administered in this manner for two to four days, and then the dose was decreased gradually, depending on side-effects and therapeutic results. Potassium chloride and a low-sodium diet were given to each patient.

The treatment was well tolerated and in no instance was there any need to discontinue treatment because of toxic effects. Four of the five patients experienced complete clinical remissions, having a total of 13 complete, satisfactory, or incomplete hematological remissions. The remissions appeared to be more sustained than would be expected had each drug been employed alone. Three patients have survived for 10, 17, and 20 months, respectively, after the diagnosis was established. These patients were still living at the time of this report. The combined administration of corticotropin or cortisone plus 6-mercaptopurine seems to be more effective in acute leukemia than is either of these agents alone.

Acute Leukemia in Adults Treated with 6-Mercaptopurine. D. M. Whitelaw, R. G. Moffat, W. H. Perry and R. E. Beck. Canad. M. A. J. **74:**423-426 (March 15) 1956 [Toronto, Canada].

Twenty-nine patients between the ages of 16 and 84 years with acute leukemia were treated with 6-mercaptopurine. Twenty-one of these were treated with this drug alone, and 8 were given combined treatment with 6-mercaptopurine and corticotropin (ACTH) or cortisone. The initial dose of 6-mercaptopurine was 150 mg. daily given orally in the morning. Alterations in dosage were made in agreement with hematological findings, and an effort was made to achieve a constant maintenance dose sufficient to keep the proliferative activity of the blast cells in check without producing thrombocytopenia or severe neutropenia. The total dose required to produce a maximal response varied from 700 mg. to 4,200 mg. and averaged about 2,000 mg. The total administered dose depended in part on the duration of life; it reached 27.5 gm. in one patient who then died, and has reached 16 gm. in one survivor. No significant toxic effects were noted from the drug except depression of the platelet count.

Most of the patients who lived longer than two weeks after the institution of the treatment with 6-mercaptopurine showed a reduction in the total circulating white blood cell count and in the number of circulating blast cells. Fifteen showed a clinical response, and in seven a complete clinical remission lasted for a period of from 3 to 12 months. This result is somewhat better than that reported by other workers for leukemia in adults. Results obtained in patients who received combined treatment with 6-mercaptopurine and corticotropin or cortisone suggest that the addition of cortisone may sometimes be helpful in influencing the course of the disease itself and in controlling hemolytic anemia or the hemorrhage associated with thrombocytopenia.

Treatment of Pulmonary Tuberculosis by Subcutaneous Infusions of Aminosalicylic Acid (PAS). G. Berger and H. Kirschner. Tuberkulosearzt **10:**154-160 (March) 1956 (In German) [Stuttgart, Germany].

Subcutaneous infusions of a solution of 16.25 gm. of aminosalicylic acid sodium in 500 cc. (3.25%) corresponding to 11.75 gm. of aminosalicylic acid (2.35%) were given twice a week to 68 patients with pulmonary tuberculosis at the State Tuberculosis Sanatorium Grafenhof in Salzburg, Austria. Sixty patients were given one course consisting of 20 infusions, and eight patients were given two courses, each consisting of 20 infusions. The infusions were made with the patient under local anesthesia, and the duration of an infusion varied from one and a half to two and a half hours. Twenty-five viscosity units of hyaluronidase were added to the aminosalicylic acid solution, which was combined either with streptomycin or amithiozone. The infusion was given simultaneously into both thighs of the patient.

Thirty-eight (74.5%) of the 51 patients with cavities were definitely improved. Cavities disappeared completely in 10 (19.6%). Of 34 patients with positive sputum before the treatment, the sputum became negative in 19 (55.8%). All of the patients had been treated previously with other tuberculostatic drugs, but the decisive improvement took place only after the aminosalicylic acid infusions. These results were better than those usually obtained with chemotherapy alone. Results in patients who received two courses of treatment were less satis-

factory. A second course was given only to patients in whom the results of the first course were not satisfactory and who, therefore, from the beginning had been more resistant to the therapy. Genuine recurrences of cavities, i. e., the recurrence of cavities that were no longer visible, were not observed. Enlargement of cavities that had not disappeared completely took place. Surgical treatment is advisable if the course of the disease is progressive despite the infusions of aminosalicylic acid.

A Significant Epidemic of Q Fever (175 Cases) in Batna, Algeria. M. Pierrou, G. Mimoune and G. Vastel. Presse méd. **64**:471-473 (March 14) 1956 (In French) [Paris, France].

An epidemic of Q fever broke out in two companies of French soldiers who had recently arrived in Batna, Algeria. The disease took the form of a grippe-like syndrome with fever, headache, and body pains. It spared almost none of the men in the companies in question, but did not involve the other soldiers stationed at Batna. This fact and the absence of nasopharyngeal catarrh led to the suspicion that the diagnosis of influenza, considered at first, was incorrect. Hirst reactions were then tested and found to be negative. Q fever was envisaged as a possibility because the soldiers had traveled in boxcars formerly used to transport animals and were quartered in a stable in Batna. Serum samples from 20 patients were sent to a laboratory, where most of them were found to agglutinate Coxiella burnetti.

An interesting fact about this epidemic is that none of the patients had the lung manifestations seen in most cases of Q fever. Although the disease was brief and benign in most of the patients, there were six who had a peculiar prolonged form with vacillating temperature and considerable functional impairment lasting about a month. There were also quite a few patients who had relapses. In view of the existence of these forms of Q fever and of the intense, prolonged fatigue occasioned by the disease, treatment with antibiotics would appear to be indicated. The soldiers of the two companies involved in the epidemic, who had not received any specific therapy in the absence of complications, were unable to continue their duty and had to be relieved. Unfortunately, the specific reaction that gives conclusive proof of the diagnosis becomes positive very late. A presumptive diagnosis warrants treatment with chlortetracycline or oxytetracycline of all new cases, which program can be extended if necessary. Prophylaxis requires that all patients be isolated and that disinfection be practiced, including burning of bedding straw used for animals.

The Efficacy of Gamma Globulin in the Control of an Epidemic of Infectious Hepatitis. F. Plotke, R. E. Wallace and L. B. Kamenetz. Illinois M. J. **109**:122-125 (March) 1956 [Chicago].

This report is concerned with the use of gamma globulin in an epidemic of viral hepatitis in the Dixon State School, a state institution housing 5,000 mentally retarded patients. The institution is 47% overcrowded and 30% understaffed, but despite this the incidence of viral hepatitis prior to the 1954 epidemic was consistent with or lower than the rate of incidence in the local community. Twenty-eight cases of viral hepatitis were observed in the first seven months of 1954. The last week of August, 1954, brought evidence that viral hepatitis had invaded the institution in epidemic proportions. On Aug. 23, a single case was detected in the boys' wing of a cottage housing 98 boys and 78 girls with an average chronological age of 10½ years and an average I. Q. of 22. Although the boys and girls in this cottage had separate living quarters and supervision, they had a common "day room." Older patients from other cottages assisted staff personnel in caring for these children. From Aug. 23 to 31, 24 cases were recorded, 21 of them in the same cottage and 3 single cases in widely separated locations. Between Aug. 23 and Nov. 27, 320 cases were detected. Of the 54 domiciliary units, 11 recorded no cases of infectious hepatitis during the epidemic. An additional 24 units recorded from one to five cases each. Four units recorded an aggregate of 109 cases, accounting for approximately 35% of the total epidemic. Of the 320 cases, only 6 involved staff personnel. Immediate action was taken to confine the outbreak by isolation of the patients and quarantining of the wards involved.

On Aug. 29, 145 patients and 86 ward workers, food handlers, and other employees believed to have been exposed to the virus in the initially infected cottage received an injection of 10 cc. of gamma globulin. The last of the 58 cases recorded at this location was detected 16 days after this inoculation. On Sept. 5, a similar group inoculation was undertaken at another location where eight cases were detected in a three-day period. All contacts in this cottage, including employees as well as patients, received gamma globulin. The last case to be recorded at this location was detected on the 15th day after group immunization. Group inoculation was undertaken at a third location on Sept. 17, after an outbreak of seven cases. At the end of September, gamma globulin was administered to approximately 5,750 persons, of whom about 750 were employees. The mass immunization called for a single injection of gamma globulin, the dosage being standardized according to age.

Observers obtained the impression that gamma globulin played an important role in abating the attack rate. When it was administered during the latter part of the incubation period it had little, if any, value in warding off the attack, but seemed to reduce its severity and duration. The exact vehicle or mode of transmission of the virus remained obscure despite intensive investigation. Evidence supports the person-to-person route of infection, particularly in view of the low standards of sanitary practices among the patients.

True Renal Glycosuria. D. H. Goodman. Arizona Med. **13**:88-91 (March) 1956 [Phoenix, Ariz.].

The occurrence of true renal glycosuria, a benign condition characterized by the presence of glucose in the urine at all times, even in the fasting state, and at all levels of blood sugar, is reported in a 19-year-old woman who was seen in consultation because of suspected diabetes mellitus. A glycosuria was noted on the patient's admission to the hospital for an appendectomy. The glucose tolerance test showed a relatively flat curve characteristic and typical of true renal glycosuria. Appendectomy was performed and the patient had an uneventful recovery. Her state of hydration and blood glucose level were maintained by adequate parenteral administration of dextrose and administration of water.

In patients with true renal glycosuria there is a defect in the cells of the proximal convoluted tubules resulting in a diminished capacity of these cells to reabsorb glucose from the glomerular filtrate without any other associated abnormality of excretory function of the kidneys. The need for recognizing this condition is emphasized because it is frequently mistaken for diabetes mellitus and pseudorenal glycosuria. It requires no treatment except possibly during pregnancy.

Evaluation of Three Diagnostic Procedures for Systemic Lupus Erythematosus. J. R. Haserick. Ann. Int. Med. **44**:497-504 (March) 1956 [Lancaster, Pa.].

Three types of diagnostic procedures that have in common their dependence on the demonstration of the cellular aggregation that constitutes the L. E. phenomenon in the patient's bone marrow, in his peripheral blood, or after appropriate incubation of his serum or plasma with normal bone marrow cells, were performed and their results compared in 79 patients with atypical systemic lupus erythematosus. Thirty of these patients had positive results from the clotted peripheral blood L. E. test, 24 had positive results from their own marrow L. E. tests, and 19 had positive results from the plasma–dog-bone-marrow L. E. test. These results were obtained in patients with low-grade illness or the so-called lupus diathesis, in whom the clotted-peripheral-blood L. E. test thus proved to be the most sensitive, the patient's own marrow L. E. test the next, and the plasma–dog-bone-marrow L. E. test the least sensitive. Of 33 such patients followed up to three years, all were living and many were asymptomatic, suggesting that a weak positive reaction to the L. E. test by itself is not necessarily of serious prognostic importance. In 63 patients with severe systemic lupus erythematosus all three diagnostic procedures were found to be positive, except for occasional

false-negative results obtained from the patient's own bone marrow procedure caused presumably by the hypoplastic marrows occasionally associated with the disease.

In order to evaluate the acceptance of the three L. E. tests, a questionnaire was sent to 20 hematologists selected by geographical location as well as because of a special interest in the L. E. phenomenon. In general, these authorities found the L. E. tests to be specific. False-negative results were not infrequent in patients in whom the clinical evaluation indicated active systemic lupus erythematosus, but false-positive results such as occur in penicillin sensitivity were rare. Positive results from L. E. tests in hydralazine (Apresoline) reactors were not considered to be false-positive because of the close clinical resemblance between the syndrome they presented and systemic lupus erythematosus. The clotted-peripheral-blood L. E. test and the plasma–bone-marrow L. E. test were found to have special advantages. A combination of both is suggested as a practical office procedure.

Brill-Symmer's Disease and Hypersplenism: A Review. J. Bichel, F. Kissmeyer-Nielsen and O. Christensen. Ugesk. læger **118:** 205-211 (Feb. 23) 1956 (In Danish) [Copenhagen, Denmark].

Brill-Symmer's disease is a hyperplastic affection of the lymphatic tissue with a well-characterized histological picture. In the first case described the disease was accompanied by a hyperplastic anemia. Splenectomy had a good effect. On recurrence of the hyperplastic condition treatment with ACTH and cortisone was applied and has kept the patient tolerably free from the hemolytic anemia for about a year. The hemolysis is attributed to specific antibodies (anti-D and anti-E) found in the blood. In the second case there was thrombopenia. The patient died from a heart disorder shortly after admission.

Follicular Lymphoma (Brill-Symmer's Disease): Histogenesis Evaluated by Cytological Examination of Splenic Punctate and Electrophoretic Studies. P. Bastrup-Madsen. Ugesk. læger **118:** 211-216 (Feb. 23) 1956 (In Danish) [Copenhagen, Denmark].

The first case of follicular lymphoma described was typical of the disease in the early stage. The only symptom present was moderate enlargement of the peripheral lymph nodes. The condition was unchanged after a year. In the second, more atypical case, general symptoms marked the picture. The objective findings were jaundice, anemia, and hepatosplenomegaly. Smears of splenic punctate revealed an increase in lymphoid reticular cells and cells interpreted as undifferentiated reticular cells. Electrophoretic analysis of the serum showed an increase in gamma globulin. Both the cytology of the splenic punctate and the increase in gamma globulin suggest proliferation of the reticular cells as the cause of the disease.

The Hemodynamics of Thyrotoxicosis in Man with Special Reference to Coronary Blood Flow and Myocardial Oxygen Metabolism. G. G. Rowe, J. H. Huston, A. B. Weinstein and others. J. Clin. Invest. **35:**272-276 (March) 1956 [New York].

Hemodynamic studies were made on 10 patients believed to have thyrotoxicosis on the basis of clinical and laboratory examination. The plan was to determine the cardiac output and coronary blood flow of each patient with thyrotoxicosis, to treat him with radioactive iodine or surgery, and subsequent to clinical improvement to repeat the hemodynamic studies. All patients were treated with radioactive iodine except one who was subjected to subtotal thyroidectomy. All studies were done in the fasting, postabsorptive state, and efforts were made to obtain basal conditions. Complete studies could be made on eight patients, and nine normal subjects served as controls. Evidence was obtained that contrary to previously published observations the myocardium participates in the increase in oxygen consumption characteristic of all body tissues in thyrotoxicosis. This hypermetabolism is accompanied by an increase in coronary blood flow, a decrease in coronary vascular resistance, and an increase in oxygen consumption per beat. It seems clear, since there is an increase in oxygen consumption per beat, that the cardiac oxygen utilization is related not only to the increase in cardiac rate but to the general hypermetabolism of the myocardium as well. Following specific treatment, the cardiac output, cardiac work, coronary blood flow, and myocardial oxygen consumption returned to normal, and the coronary vascular resistance increased.

Clinical Test of New Orally Given Diuretic, 1 Propyl-3-Ethyl-6-Aminouracil (Mictine). N. I. Nissen and B. Zachau-Christiansen. Ugesk. læger **118:**188-192 (Feb. 16) 1956 (In Danish) [Copenhagen, Denmark].

Mictine (1 propyl-3-ethyl-6-aminouracil) is regarded as an effective diuretic, valuable in the treatment of milder tendencies to edema in patients with cardiac and hepatic disorders, particularly where there is sensitivity to mercurial preparations. It was tested as an orally given diuretic in 66 patients. In 50 patients, of whom 45 (average age 66 years) had heart disease with more or less decompensation and five (average age 68 years) had cirrhosis of the liver with ascites, doses of 800 mg. daily for three days gave a total diuresis equal to that after administration of 1 ml. of Thiomerin. It seems practical to give the preparation three days a week in the dosage named. The diuretic effect, where emetic symptoms do not appear, is mild and far more pleasant than after the injection of mercurial diuretics. Gastrointestinal symptoms (nausea and vomiting and sometimes diarrhea) may be expected in about one-third of the cases with the dosage mentioned. In such cases an attempt may be made to modify the dose or administer the substance one or two days at a time. In 16 patients (average age 71 years) with more or less grave heart decompensation, Mictine in the same dosage was given continuously for 10 days. Treatment had to be terminated in 4 cases; there was a distinct rise in diuresis in 12 cases.

Hyperglycemia and Glycosuria After Ingestion of Glucose by Ambulatory Patients over 40 Years of Age. P. H. Futcher and D. M. Marcus. J. Chron. Dis. **3:**294-300 (March) 1956 [St. Louis].

In order to identify subjects with minor impairment of the ability to metabolize sugar, the authors employed the Folin-Wu technique to measure the venous blood sugar two hours after the ingestion of 100 gm. of glucose in 180 subjects aged 40 years or more who manifested no sugar in the fasting urine and whose fasting blood sugar level was below 120 mg. per 100 cc. In 56 (31%) of the 180 subjects, the blood sugar level two hours after the ingestion of the glucose exceeded 119 mg. per 100 cc.; in 29 of these 56 subjects it exceeded 139 mg. per 100 cc. Elevation of the blood sugar level above the accepted normal value frequently occurred without concomitant glycosuria. Subjects in whom abnormal elevations of postprandial blood sugar levels were thus demonstrated were more often overweight than those in whom the levels were normal. It is suggested that subjects identified by this screening test as manifesting possible impairment of carbohydrate metabolism should be tested at regular intervals for further evidence of diabetes mellitus.

Recurrent Oculomotor Palsy in Diabetes Mellitus. S. G. McAlpine. Scottish M. J. **1:**44-45 (Jan.) 1956 [Glasgow, Scotland].

A 68-year-old woman was first seen by the author in January, 1955. She had become ill on Christmas day, 1954, with nausea, vomiting, and undue tiredness. At this time she observed that the left upper eyelid had drooped and that she had double vision on looking to the right side. Recovery from the gastrointestinal upset occurred over the course of a few days, but the ptosis and diplopia persisted. There had been no disturbance of the limbs other than some aching pain in the legs. For about a year she had been troubled by pruritus vulvae, but she was not unduly thirsty and had no polyuria. The only past illness that the patient could recall was a left facial palsy four years previously. Examination of the blood sugar and a glucose tolerance test revealed diabetes mellitus. In view of the neurological complications, this patient was treated by both diet and insulin, although her diabetes was relatively mild. Stabilization was achieved on a diet of 1,600 calories and 24 units of insulin zinc suspension (lente) given in the morning. In May, 1955, the patient had an acute coryza with frontal headache. She recovered, but in June, three weeks after the onset of the coryza,

she noticed that her right upper eyelid had drooped and that she had diplopia on looking to the left. Examination revealed a right-sided ptosis, right external strabismus, and paralysis of the extraocular muscles supplied by the right third nerve. In August, 1955, improvement had taken place. Ptosis had almost completely disappeared, but there was still diplopia and a slight external strabismus.

When neuropathy complicates diabetes, the lower limbs are most frequently involved. The cranial nerves are rarely affected. The patient presented had symptoms of diabetes for one year, and signs of chronic neuropathy affecting the lower limbs and of active, transient, but relapsing neuropathy affecting the oculomotor nerve, first on the left side and then on the right. It is speculative to suggest that the facial palsy four years previously was also a manifestation of diabetic neuritis. It might equally well have been a simple Bell's palsy. However, the presence of neuritic changes in the legs and the characteristic diabetic changes in the left optic fundus suggest the possibility that diabetes was present for a longer time than the symptoms would indicate. The prognosis of ocular palsy in diabetes is usually good.

The Treatment of Certain Diseases of the Liver by Intravenous Administration of Liver Extracts Combined with Lipotropic Substances and Vitamins. O. Pace. Minerva med. **47**:458-460 (Feb. 17) 1956 (In Italian) [Turin, Italy].

The author was able to administer by intravenous injections several hepatoprotective drugs. The treatment consisted of the administration of the antitoxic fraction of liver extract combined with lipotropic factors and vitamins B_{12} and PP. Pharmacological research on the extracts proved that they are antitoxic. Choline, one of the lipotropic substances, prevents the deposition of fats in the liver, especially the neutral fats. The absence of choline prohibits the synthesis of neutral fats and of phospholipids. Vitamin PP plays an important role in the functioning of the liver. The author studied 10 patients out of 20 that he treated. All the 10 patients were affected with some disease of the liver. The treatment lasted 20 days, and signs of recovery were already present in all cases.

Clinical and Physiopathological Bases of Treatment of Edematous Syndromes with Delta-Cortisone (Metacortandracin). R. Cattan and P. Vésin. Semaine hôp. Paris **32**:712-719 (Feb. 29) 1956 (In French) [Paris, France].

Four patients with different conditions in which edema was an important factor received great benefit from therapy with prednisone (Δ-cortisone). One had febrile jaundice, the second chronic jaundice with diarrhea and anasarca, the third dyspnea with abundant sputum and massive edema of the legs, and the fourth cirrhosis with ascites. Certain characteristics are common to all cases of edema, regardless of etiology. The adrenal cortex hypersecretes aldosterone, and antidiuretic factors are present that are probably of hypophysial origin. The substances represent an effort on the part of the body to correct osmotic imbalance, but at the same time they cause chronic edema. The steroids of the cortisone type act on water metabolism by inhibiting its reabsorption by the renal tubules, and they also increase renal clearance of sodium. In a patient with an edematous syndrome, the edema may disappear completely while the decreased levels of serum protein and albumin do not rise. In cirrhotic edema, the effects of prednisone are independent of the initial protein levels and their possible increase during the course of therapy. The principal indications for prednisone therapy of edema are cirrhosis with ascites, edema of benign acute hepatitis, edema of nutritional deficiency, and cardiac edema resistant to the standard measures.

Pathophysiology and Treatment of Adrenal Crisis. M. B. Lipsett and O. H. Pearson. New England J. Med. **254**:511-514 (March 15) 1956 [Boston].

Formerly, the term adrenal crisis implied the situation existing in the patient critically ill with adrenal cortical hypofunction (Addison's disease), but since the introduction of adrenalectomy it has become important to inquire into the different requirements for cortisone of adrenalectomized patients and of those with adrenal cortical hypofunction, which cannot be equated with bilateral adrenalectomy. In adrenal cortical hypofunction the adrenals are rarely completely destroyed. Clinically, the disease is a spectrum of varying degrees of adrenocortical insufficiency. Adrenal crisis may develop without external loss of sodium. It is important to distinguish between sodium depletion, deficiency of 17-hydroxycorticosteroids, and a combination of the two. It is possible to separate the roles of sodium depletion and lack of 17-hydroxycorticosteroids in the genesis of adrenal crisis. It is proposed to reserve the term adrenal crisis for the syndrome developing because of a deficiency of these steroids. When sodium depletion is superimposed, this should be recognized and so stated. Administration of large amounts of hydrocortisone is of paramount importance in the treatment of adrenal crisis. Intravenous infusion of saline solution should be used only when circumstances suggest previous salt loss.

Exfoliative Gastric Cytology. L. van der Reis, J. A. Rider and J. K. Frost. Am. J. M. Sc. **231**:249-252 (March) 1956 [Philadelphia].

Gastric cytology was practiced in 70 patients with radiological and gastroscopic evidence or symptoms indicative of gastric malignancy. Each patient underwent routine mucolytic enzymatic gastric lavage on one or more occasions. The solutions used for lavage contained either chymotrypsin or papain as the mucolytic enzyme. The specimen for examination was collected in the morning. The patient was given a small semiliquid supper the night before, and nothing was taken orally before the examination. Very occasionally, if gastric retention was marked or if a previous examination was unsatisfactory due to retention, Wangensteen suction was employed overnight. The digestive action of the enzyme on the exfoliated cells must be kept to a minimum. After the specimen is centrifuged at 2,000 rpm for 10 to 20 minutes, the precipitated sediment is smeared upon glass slides, fixed immediately in an ether-alcohol solution, and stained by a slight modification of the Papanicolaou method.

A total of 84 gastric washings from 70 consecutive patients were examined cytologically. Five specimens from four patients contained cells that were reported as having been shed from a carcinoma. All four patients were subsequently proved to have adenocarcinoma of the stomach. Thus when an unequivocal cytological diagnosis of malignancy was made, the accuracy in this study was 100%. Of patients with cells that were felt to be diagnostically inconclusive, 25% proved to harbor a cancer. Of those for whom a negative report was rendered, 3% had carcinoma.

The value and accuracy of this method depend mainly upon the technique employed in obtaining and preparing the sample, the thoroughness of the screening procedure, and the experience of the pathologist who interprets the microscopic specimen. The relatively small size of this group of patients did not permit a true evaluation of the relative advantages of the two mucolytic enzymes. They yielded essentially the same diagnostic results. Chymotrypsin lacks the sickening smell and taste of papain, making the procedure more acceptable to the patient. The preparation of the enzyme-containing solution is somewhat less complicated in the case of chymotrypsin. Furthermore, the amount of background debris in the stained chymotrysin specimen has tended to be somewhat less.

Chronic Ulcerative Colitis: Recovery After Leukotomy. M. Tyndel and W. Forster. Canad. M. A. J. **74**:455-457 (March 15) 1956 [Toronto, Canada].

A case of chronic ulcerative colitis is described in a 35-year-old emotionally unstable woman with hypochondriasis and chronic diarrhea. The picture of catatonic schizophrenia developed in the patient during difficult and apparently unbearable life situations. It is probable that the same psychological stress caused the concomitant ulcerative colitis in the presence of chronic mechanical irritation of the rectum by manipulation with the fingers. Prefrontal leukotomy was performed after repeated treatments with electroshock, insulin coma, and electro-

stimulation with the Reither apparatus had been followed by only slight and transient improvement. Prefrontal leukotomy had a considerable effect in relieving tension, leading to marked improvement in the catatonic symptoms and delusions as well as in the somatic manifestations in the colon. Lessening of the emotional tension also contributed to the latter improvement by cutting out the digital irritation of the rectum. It is probable that local somatic factors may determine whether the regressive evasion of a life situation producing conflict may evoke in one patient entirely psychological symptoms such as obsessive-compulsive pictures or paranoid delusions and in another an organic intestinal disturbance such as ulcerative colitis. Somatic conditions, probably caused by emotional stress, should also be taken into account when the question of psychosurgery arises in chronic psychiatric disorders.

Active Immobilisation of Joints in Rheumatoid Arthritis. M. Kelly. New Zealand M. J. **55:**11-14 (Feb.) 1956 [Wellington, New Zealand].

Active immobilization implies that the limb is used while the painful joint is fixed. The hand is used while the wrist or the elbow is fixed; the leg is walked on while the knee is fixed. Thus the muscles are kept healthy and the tendons are not allowed to become adherent. Rheumatoid arthritis occurs only in mobile tissues, and when these are put at rest the arthritis subsides. Though a chronic disease, it is characterized by acute attacks in individual joints. In the acute stage of the inflammation, continuous fixation is still useful. The joint does not become ankylosed so long as its cartilage has survived. On the contrary, ankylosis is prevented. The periarticular swelling and synovial thickening subside forthwith, and the synovial fluid soon disappears. Within a few days the joint looks normal. After three to five weeks it should be splinted intermittently. Only the gentlest active movements, within painless range, are required to restore the full range. Soon after the plaster has been removed the range of movement may be greater than it was before the joint was fixed.

Fixation removes three factors that make for stiffness: (1) painful movement; (2) spasticity of muscles; and (3) thickening of capsule. In an arthritic joint the chief stimulus to pain is movement, not pressure. A patient may walk with ease on his painful and swollen knee as long as he does not bend it. A metatarso-phalangeal joint may be so tender that the patient cannot put it to the ground; soon after it is put in plaster he may be able to stamp the foot on the floor. Inability to use the hand is usually secondary to arthritis of the wrist. If the wrist is immobilized so that the fingers can be used, the function of the hand will soon be restored. If the wrist has dropped, the deformity should be corrected under general anesthesia. An acutely arthritic knee should be immobilized continuously in a cylindrical plaster cast or band caliper, and the patient should walk. A flexion deformity should be corrected under general anesthesia.

Results of Long-Term Treatment of Rheumatoid Arthritis: Attempt at Comparative Evaluation of Cortisone and Corticotrophin Therapy. R. Jordal. Danish med. bull. **3:**24-30 (Feb.) 1956 (In English) [Copenhagen, Denmark].

The results and secondary effects of treatment with cortisone and corticotropin are on the whole alike, but with corticotropin, atrophy of the adrenals is avoided and there is even adrenal hypertrophy. It is important to apply the smallest possible dose in long-term treatment of rheumatoid arthritis with adrenal cortical extract. Long-term treatment with corticotropin was given to 45 patients with rheumatoid arthritis and three with rheumatoid spondylitis. Corticotropin is to be preferred for long-term treatment of diseases such as rheumatoid arthritis, where the adrenal cortex functions normally according to present knowledge, particularly because atrophy of the adrenal cortex is avoided, while cortisone is preferable where the adrenal cortex is under maximum stimulation, as in fulminant infections such as epidemic cerebrospinal meningitis (Waterhouse-Friderichsen syndrome).

SURGERY

Successful Removal of a Myxoma from the Left Atrium. J. G. Scannell, W. R. Brewster Jr. and E. F. Bland. New England J. Med. **254:**601-604 (March 29) 1956 [Boston].

The successful removal of a myxoma from the left atrium of a 33-year-old man is described. The presenting symptoms and signs were characteristic of mitral stenosis of high degree, with dyspnea at rest, slight enlargement of the heart, regular rhythm, and a typical presystolic roll of grade 3 intensity, ending with crescendo in a sharply accentuated first sound. There was an associated presystolic thrill. The pulmonic second sound was moderately loud, and there was an opening snap. The electrocardiogram showed the pattern of right ventricular hypertrophy and prominent, broad P waves consistent with hypertrophy of the left atrium. Chest roentgenograms showed a slightly enlarged, triangular-shaped heart with fulness of the left atrium and congestion of the lung roots.

At the first operation, during which nitrous oxide, oxygen, and ether were given intratracheally, a posterolateral approach was used. The atrial appendage was of normal size and configuration, providing easy entry into the atrium, which the exploring finger showed to contain a soft, lemon-sized mass attached by a narrow pedicle to the base of the interatrial septum close to the posteromedial commissure of the mitral valve. The tumor had prolapsed into the valve orifice, effectively interfering with blood flow through that structure. It was thought best to postpone removal of the tumor until, with the aid of hypothermia, the circulation could be interrupted temporarily, the left atrium opened, and the tumor excised deliberately under direct vision. This was done at the second operation, which was performed three weeks later. Cooling was effected by the surface application of ice packs. The body temperature gradually fell from 37 C (98.6 F) to 29.7 C (84.2 F) in approximately three hours. Then the ice packs were removed and operation begun. An anterolateral approach was used. Both internal carotid arteries and the inferior vena cava were occluded by clamps, the superior vena cava was occluded by traction on a previously placed tape, and the aorta and pulmonary artery were cross clamped. The atrium was opened and the tumor separated by finger dissection from the atrial septum and removed by forceps. The atrial and ventricular cavities were then filled with sodium chloride solution to prevent peripheral air embolism, and the atrial incision was grasped in a curved Potts clamp. The cardiac action, which up to then had been good, suddenly changed to ventricular fibrillation. The atrial incision was rapidly oversewn and the occluding clamps were removed. The time of total interruption of the circulation was five and one-half minutes. Manual compression and release of the heart (massage) was effective in restoring a recordable pulse pressure of 60 systolic and 40 diastolic in the radial artery. The central nervous system was partially protected from the effects of hypoxia by the hypothermia; yet it is important to emphasize that an adequate cerebral circulation was maintained manually for approximately two hours after the onset of fibrillation. Only then did it become evident that regular rhythm had been reestablished after an electric shock and an intraventricular injection of calcium chloride. The pericardial and chest incisions were closed, the patient was wrapped in warming blankets, and the body temperature gradually rose, reaching 37 C (98.6 F) 12½ hours after cooling had begun. The remainder of the postoperative course was remarkably benign. The pathological report on the tumor removed was that it was a myxoma. The value of hypothermia as an adjunct to cardiac surgery has been illustrated.

Volkmann's Contracture: Treatment by Excision of the Infarct. H. J. Seddon. J. Bone & Joint Surg. **38B:**152-174 (Feb.) 1956 [London, England].

Volkmann's contracture is now generally recognized to be a contracture due to ischemia. The present report is limited to the commonest form of ischemic contracture, that affecting the flexor muscles of the forearm. The ischemic infarct takes the form of an ellipsoid with its axis in the line of the anterior interosseous artery and with its central point a little above the middle of the forearm. The greatest damage is at the center and is usually

worst in the flexor digitorum profundus and flexor pollicis longus, which are often necrotic. Muscles more superficially placed, and sometimes the deep extensors, are more likely to exhibit fibrosis. The median nerve runs near the center of the ellipsoid and may exhibit profound ischemia. The ulnar nerve, lying at the edge of the ischemic zone, tends to be less severely involved. The author summarizes the involvement of muscle groups and of nerves in 16 patients with contracture due to ischemia.

The treatment consists of the excision of all irreparably damaged muscle and nerve followed by such reconstructive procedures as may be required to minimize the deficiency. The 16 cases reviewed were selected on account of their severity. It is only in such cases that excision is appropriate. Although the structural changes that are reversible are easily distinguishable pathologically from those that are not, the clinical distinction is difficult and requires waiting and watching. One should wait for at least three months or even six months for evidence of spontaneous recovery in the forearm muscles before embarking on the drastic treatment proposed in this paper. During this time treatment should be limited to (1) splinting to minimize the contracture; (2) movements of all joints; and (3) daily galvanic stimulation of the muscles of the hand if there is a nerve lesion. The author lists the shortcomings of operations commonly used for the relief of contracture due to ischemia and describes the evolution of his operation.

The idea of excising all tissues irreparably damaged by ischemia came to him while treating a young man who had lost the greater part of the tissues of the forearm in a machine accident. After the usual treatment of the primary wound, the raw area was covered with skin. A free graft from the ulnar nerve was used to bridge the large gap in the median; the wrist was fixed by arthrodesis and the extensors used to activate the digits. This man was able to return to work and was far better off than the average patient with severe contracture due to ischemia. The development of the operation is briefly outlined, and the results of operations on muscles and of nerve repair on the 16 cases are presented in tables. If this operation is performed within 12 months from the time of injury, correction of the contracture should be almost complete. The tendons of shortened but active muscles are lengthened or transplanted. After such excision it is possible to carry out reconstructive procedures commonly used in the surgery of lower motor neuron disorders and of trauma. A wide variety of tendon transplantations is available. The median nerve may be repaired either by a free graft or, in cases where both nerves have been extensively damaged by ischemia, by an ulnar to median nerve-pedicle graft.

Sudeck's Atrophy in the Hand. L. W. Plewes. J. Bone & Joint Surg. **38B:**195-203 (Feb.) 1956 [London, England].

Osteoporosis due to trauma (Sudeck's atrophy) of the acute type is not uncommon in the hand. It responds to conservative treatment if the diagnosis is made within six weeks of the onset of symptoms. Thirty-seven patients with this syndrome were observed in three years among 80,000 patients admitted to the accident services of a group of hospitals. Two-thirds of these 37 patients were women.

Pain, swelling, and dysfunction developed at an average of eight weeks after injury and were accompanied by the following signs: hyperemia, loss of Langer's lines, obliteration of skin creases, loss of tissue turgor in the pulp, changes in skin temperature and color, nail ridges, limitation of movement, and tenderness. Power of grip was grossly impaired, and the volume of the hand increased by 10 to 20%. The pain is burning or aching in character, and several patients described it as being deep. The terminal pulps of the fingers feel less resilient than normal, and the return of the skin color after pressure is brisk. Transverse ridges appear on the nails. In the early stages the hand is deep pink and the skin feels warm. Later, the skin takes on a mottled cyanotic appearance and feels cold and dry.

The characteristic radiographic appearance is not present in the early stages but takes six to eight weeks to show, and it is for this reason that the diagnosis is often overlooked. The spotty rarefaction that involves the ends of the phalanges and metacarpals is unmistakable. Sometimes the carpus and the distal ends of the radius and ulna are involved. The spotty appearance is unlike the generalized ground-glass appearance seen in disuse atrophy, which takes much longer to develop. On occasions pain and dysfunction in more proximal joints follow (elbow and shoulder); here again, the same radiographic appearance can be seen.

The treatment at the author's clinic is conservative and consists in the application of heat, elevation of the limb, and graded function. Hot wax is just as effective in the relief of pain as blocking the cervical sympathetic chain with procaine. The hand is immersed in hot molten wax for a minute or so until it feels warm and is then covered with a polythene glove. The limb is then elevated on an inclined plane with a completely enclosed radiant heat cradle to keep the hand temperature between 105 and 110 F (40.5 and 43.3 C). Exercises for the intrinsic muscles are then taught and supervised by the physiotherapist. This procedure is carried out twice a day for half an hour each time. The rest of the day is spent in the remedial workshop, where the patient operates a machine with the operating lever raised so that the affected hand is kept above the level of the shoulder. Warmed air is blown into a transparent cabinet that surrounds the hand and maintains a temperature of 105 F. For the first week or two simple analgesics are necessary, but their use can nearly always be discontinued by the third week. Each day the power of grip is recorded and the volume of the hand is measured.

It was found that osteoporosis due to trauma was nearly always accompanied by an alteration in the palmar fascia that may go on to a typical Dupuytren's contracture. These two conditions apparently have nothing in common except that they affect persons of about the same age. The fact that most of the patients were women, whereas Dupuytren's contracture is at least six times more common in men, may be explained by the higher incidence of wrist fractures in women.

Histiocytic Granulomatosis. W. Mercer and R. B. Duthie. J. Bone & Joint Surg. **38B:**279-292 (Feb.) 1956 [London, England].

The term histiocytic granulomatosis, suggested by Farber in 1941, is favored by the authors because the constant pathological feature of the disease is the presence of numerous histiocytes and granulomatous tissue. These cells, in the case under consideration, have undergone a transformation from the early stage, where there were numerous eosinophil cells simulating an eosinophilic granuloma, to a later stage in which are seen numerous "foam cells" typical of a lipoid granulomatosis. This change has been followed through a period of six years. The patient was 31 years old when first seen in July, 1949. She complained of aching pain in the left hip, thigh, and knee regions. There was local tenderness and there was limitation of all movements of the left hip. Radiographs showed "cystic" areas in the skull, pelvis, femurs, scapulas, and right humerus. A biopsy revealed a histiocytic granuloma characterized by eosinophils and foam cells. Deep x-ray therapy was given, with improvement in the pain after initial aggravation. The pain recurred, however, and continued throughout 1949. In November, 1950, on falling from a bus, the woman sustained a transverse fracture of the right femoral neck. A radiograph showed this to be through another area of diseased bone. She was immobilized in a plaster hip spica for six months without any radiological evidence of bone healing. In spite of this she was allowed up in a walking caliper, and for six months she was ambulant. In 1951, the pain became more acute in the region of the right hip, and she sustained a pathological fracture—intertrochanteric in type—in the left femur, with severe pain. On reaching for the nurse's arm shortly afterwards, she experienced another episode of severe pain in the right upper arm, which proved to be the result of another pathological fracture—oblique in nature—through the midshaft area of the right humerus. This patient was then placed in a plaster posterior shell with a right-angled arm support for the fractured humerus, and in this she was nursed both in hospital and at home during the next four years. A high-protein diet with supplementary vitamins was given with oral therapy with iron.

After the multiple pathological fractures in 1951 and because of the poor general condition, with cachexia, low grade pyrexia, and a raised sedimentation rate, cortisone was given orally for three weeks. Although the general condition of the patient improved, there was no cellular alteration on biopsy. In 1953, a course of nitrogen mustard treatment was tried without success.

In November, 1954, because there had been no bone repair in any of the lesions except in the fractured humerus, radical saucerization of the pathological fractures in both femurs was carried out and the areas were packed with cancellous bone from the bone bank. After six months' immobilization, although there was little evidence of new bone formation, an attempt to mobilize the patient was made. Following physiotherapy, bilateral non-weight-bearing walking calipers were tried, and walking with crutches was finally achieved. The prognosis must be guarded in this case as well as for the condition generally, especially with the multiple involvement of skeletal and extraskeletal systems.

Since Fraser's review in 1935, much thought has been given to the disease and its terminology. Reviews by Jaffe and Lichtenstein and by others describe the origin of the varying eponyms such as Hand-Schüller-Christian disease, lipoid granulomatosis, solitary granuloma of bone, nonlipoid histiocytosis or Letterer-Siwe disease, eosinophilic granuloma of bone, nonspecific granuloma of bone, and, most recently, histiocytosis X. An important advance was made by Farber's observation in 1941 that "anatomically the underlying lesion in eosinophilic granuloma is related to the lesion of Schüller-Christian disease and that of Letterer-Siwe disease." This was further expounded by Farber in 1942 and in great detail by Jaffe and Lichtenstein, who described these three conditions as "different clinico-anatomic expressions of the same basic disorder."

Surgical Tactics in Life-Threatening Hemorrhages in Patients with Gastric or Duodenal Ulcer. S. V. Heinats and A. A. Ivanov. Vyestnik khir. **77:**9-17 (Jan.) 1956 (In Russian) [Moscow-Leningrad, U. S. S. R.].

In the majority of hemorrhages of the erosive type in patients with peptic ulcer, radical therapy at the height of the incident is indicated. Resection under cover of massive blood transfusion is the method of choice; the transfusion should be administered during the operation. If the patient is treated early in the course of the complication, 1 or 1½ liters of blood should be given; if treated late, the dose should be between 2 and 4 liters. Over a 25-year period, the authors treated 153 out of 171 such patients by resection, the mean amount of blood transfused being 2 liters. There were seven deaths, a mortality rate of 4.57%, while 6 of the 18 patients who refused surgical therapy died despite treatment with conservative methods. Among the 128 patients with resections carried out at the time of maximum blood loss, there were six deaths (4.88%). In this group, 2 of the 57 patients operated on within the first 48 hours died (3.5%) and there were four deaths among the 71 with delayed resections (5.63%). The 25 resections performed during a quiescent period resulted in one death. The results of operation among the survivors were excellent. In doubtful cases, roentgen diagnosis can be attempted during hemorrhage. In the absence of a history and with the patient unconscious, the risk attendant on an exploratory laparotomy is always less than that from further delay.

On the Treatment of Acute Generalized Peritonitis. V. I. Popov and V. I. Filin. Vyestnik khir. **77:**17-26 (Jan.) 1956 (In Russian) [Moscow-Leningrad, U.S.S.R.].

In addition to the standard operative and supportive measures for the treatment of acute generalized peritonitis, the authors recommend the abundant administration of a solution (developed by Popov) containing 75 parts glucose, 50 parts alcohol, 7.5 parts sodium chloride, 2 parts sodium bicarbonate, and 500 parts distilled water, to combat the shock and collapse of the severe forms. A number of other blood-replacing solutions have proved valuable, together with cervical vagosympathetic block. Preoperative and postoperative intramuscular injections of a mixture of analgesic and ganglioplegic drugs and vitamin B_1 markedly improve the general condition of these patients. Intratracheal ether-oxygen anesthesia including the use of curare-like agents is excellent for the operative treatment of generalized or purulent peritonitis.

Experimental studies showed that the combined use of streptomycin and penicillin gives the best results in antibiotic therapy of the condition. Given separately, these drugs are not always capable of destroying all the pathogenic bacteria in the peritoneal exudate. The least satisfactory results were obtained from administration of gramicidin. Local applications of solutions of this antibiotic are undesirable because it has toxic effects when used in massive doses and poor bactericidal activity when used in moderate doses. Repeated injection of streptomycin and penicillin via the general and intraperitoneal routes simultaneously is a satisfactory method of administration, but the authors prefer continuous drip infusion of large doses of these antibiotics dissolved in large amounts of procaine solution through one or, in the majority of patients with peritonitis, several resin tubes spaced out in various portions of the peritoneum.

Solitary Polyps of the Colon and Rectum: A Study of Inherited Tendency. R. C. Richards and C. Woolf. Am. Surgeon **22:**287-294 (March) 1956 [Baltimore].

A large family group in Salt Lake City, made up of four generations with an abnormally high incidence of death from carcinoma of the large intestine, was studied concerning the possible correlation between the incidence of carcinoma and the incidence of adenomatous polyps of the colon and rectum. The original male progenitor had four wives; he died of a malignant melanoma of the leg, but none of the wives was suspected of having malignancy. Of his 24 children, 18 lived to adult life and 6 (33%) of these died of carcinoma of the intestinal tract. Four of the carcinomas were reported as cancers of the rectum or colon. The 18 children produced 122 third-generation children. Sixty-two of the 96 living third-generation children were examined. Thirty-one of these patients (50%) had one or more adenomatous polyps in the distal 25 cm. of the colon and rectum. Nine patients had from two to four polyps as revealed by sigmoidoscopy. Twenty-two (71%) had only solitary lesions. The age and sex distribution of the patients and the character of the lesions were similar to those seen in other reported studies of solitary polyps of the large intestine. Two of 12 children of the fourth generation who were examined also had polyps, and 14 of 20 members of the third generation who were reexamined after 12 to 18 months had new lesions.

The findings strongly suggest a definite familial trait in the occurrence of solitary polyps in this group and provide an adequate explanation for the high incidence of carcinoma of the large intestine in the original family. The disease involved 13 of the 14 sibships studied in the family, and involvement with cancer or polyps was demonstrated in three generations in at least two members. This suggests a form of dominant inheritance. The 50% incidence in the third generation further suggests that the male progenitor of the family group was homozygous for this dominant gene. The clinical implication of a possible familial trait in the origin of solitary polyps is that, in addition to routine sigmoidoscopy on all hospital and office patients, a more adequate family history concerning cancer should be obtained. It not infrequently happens that two or more members of a family succumb to carcinoma of the large intestine. In such a family it would seem just as advisable to advocate a family survey of adult members as to continue routine, long-term follow-ups on the individual patient with known polypoid disease.

Neomycin-Nystatin for Preoperative Preparation of the Colon. I. Cohn and A. B. Longacre. Am. Surgeon **22:**301-307 (March) 1956 [Baltimore].

Five patients selected at random from the surgical department of Louisiana State University in New Orleans, who did not have any known disease of the gastrointestinal tract, were placed on a low-residue diet, given a cathartic the first day of the program, daily enema, and a compound of neomycin-Nystatin, two tablets every hour for four hours and then two tablets every four hours for 72 hours. Each tablet contained 0.5 gm. of neomycin sulfate and 125,000 units of Nystatin, so that the unit dose was 1 gm. of neomycin and 250,000 units of Nystatin. Quantitative bacteriological analyses were done on a control stool, on stools from each day of therapy, and on a stool collected on either the second, third, or fourth day after the withdrawal of drugs. By this means it was possible to evaluate the reduction of bacterial flora in the feces and the rate of return to normal level. Results showed that three days of therapy rendered the stool almost free of enterococci, streptococci, micrococci (staphylococci), coliform

organisms, clostridia, bacteroides, and yeasts. The rapid and complete disappearance of so many organisms and the relatively rapid return to normal indicated that the drug did not completely upset the normal relationship of the bacterial flora of the gastrointestinal tract but controlled it sufficiently to make surgery safer. Side-reactions were minimal.

Administration of neomycin-Nystatin in combination with mechanical cleansing is one of the most effective means for preoperative preparation of the colon before elective surgery. Administration of neomycin-Nystatin should be the preferred method of therapy in any patient who has been subjected to prolonged antibiotic therapy previous to the preoperative preparation of the colon.

Peripheral Artery Replacement with Chemically Treated Nylon Tubes. W. S. Edwards and J. S. Tapp. Surg. Gynec. & Obst. **102:**443-449 (April) 1956 [Chicago].

Despite the successful use of preserved human arteries as vascular grafts, certain difficulties involved in their use have led to a search for a prefabricated tube. This report is concerned with flexible nylon tubes. These tubes are braided of 210-denier nylon yarn and are treated with a formic acid dip that swells and partially dissolves the outer layer of each fiber and allows each fiber to stick to those adjacent to it, thus producing a tube that can be cut at any level at the operating table and can hold arterial sutures without fraying. An additional benefit derived from this treatment is reduction of pore size so that temporary bleeding through the cloth is much reduced. To further reduce blood loss through the mesh, an ether-soluble silicone dip has been used. Thus a porous tube is produced that maintains a cylindrical shape, repels water, and can easily be cut and sutured. The chief remaining difficulty, kinking on flexion, has been overcome by "crimping" the tube. This is done by pushing the two ends together on a glass mandrel after the formic acid treatment but before the heat setting (140 degrees C). This circular crimp allows 180 degrees of flexion without kinking or obstruction. The tubes can be used in flexion areas, groin, axilla, and popliteal space and as a by-pass graft around an obstruction. The tubes may be sterilized by autoclaving.

Fifteen nylon grafts have been introduced into the peripheral vessels of 14 patients. Early in the clinical use of the nylon tubes it was thought that the irregular crimps on the inside would offer serious resistance to blood flow in long grafts, increasing the likelihood of thrombosis; therefore, a number of cylindrical tubes without crimps or with minimal crimps were used. In one patient, a 15-cm. straight graft was sutured end-to-end into an arterial defect in the midthigh from excision of an obstructed superficial femoral artery. Peripheral pulses never returned. In four other patients, long straight grafts with short crimped segments on each end were used as by-pass grafts around obstructions from 10 to 33 cm. in the superficial femoral artery. One graft functioned well for three days before pulses disappeared, and two functioned satisfactorily for two weeks, at which time thrombosis occurred. One was an immediate failure because of insufficient runoff down the obstructed popliteal branches.

The early results in 10 consecutive patients with artery replacement by crimped tubes have been very encouraging, success having been obtained in nine cases. A much longer period of observation will be necessary to determine how long these grafts will remain patent in the human and whether degenerative changes will occur. Grafts removed from animals killed after one year have shown a very thin smooth inner lining without the slightest evidence of calcium deposition.

The Etiology and Treatment of Peptic Esophagitis. F. S. Cross and E. B. Kay. Ann. Surg. **143:**360-368 (March) 1956 [Philadelphia].

Esophagitis was associated with hiatal hernia in 41 of 55 patients, while hiatal hernia was not present in the remaining 14. Severe vomiting, duodenal ulcer, and previous operations such as cardioplasty were assessed as causative factors in 9 of the 41 patients with hiatal hernia and in 12 of the 14 patients without hiatal hernia. Of the 41 patients with hiatal hernia, 18 were treated by repair of the hiatal hernia, 21 were treated conservatively, and an esophagogastrectomy was carried out in 2. Nine of the 18 patients had severe stenosing esophagitis, and 7 of these 9 patients obtained good results with complete amelioration of preoperative symptoms. Nine other patients with lesser degree of esophagitis also obtained complete relief of all symptoms after the repair of the hernia. The results of conservative treatment were less satisfactory and the period of treatment prolonged. The results of esophagogastrectomy were poor. Repair of the hiatal hernia is suggested as the treatment of choice even in patients with minimal esophagitis with significant symptoms.

Most of the 14 patients with esophagitis in whom no hiatal hernia was demonstrable were treated by diet supplemented by dilatation when indicated. Four patients were treated by esophagogastrectomy and two were operated on for acute perforation of the esophagus, and the perforation closed. Results suggested that conservative treatment by diet and by dilatation should be pursued more assiduously, especially in those patients in whom the initiating factor can be traced to a single event, such as an attack of severe vomiting or the presence of a gastric tube in the postoperative period, where the insult to the esophagus is not likely to be a continuous or repetitive one. Subtotal gastric resection or extensive esophagogastrectomy, with or without interposition of a jejunal segment between the stomach and esophagus, should be reserved for unresponsive patients. The concept of surgical treatment being directed toward the reconstitution of the cardiac sphincter mechanism, adequate reduction of acid peptic secretions of the stomach, spatial separation of the esophagus from the acid peptic juices, or the provision of satisfactory gastric drainage is stressed.

Comparison of Blood Loss and Operative Time in Certain Surgical Procedures Completed With and Without Controlled Hypotension. J. W. Ditzler and J. E. Eckenhoff. Ann. Surg. **143:** 289-293 (March) 1956 [Philadelphia].

Results obtained in 90 patients in the course of general surgical procedures performed with the aid of deliberate reduction of arterial blood pressure were compared with those in 84 patients with similar operations performed without the aid of hypotension. Trimethaphan camphorsulfonate (Arfonad) was used in a 0.1 to 0.2% solution as continuous drip in combination with standard inhalational endotracheal anesthetic techniques to produce hypotension in 65 patients; spinal anesthesia with 5% procaine in cerebrospinal fluid or 0.4% tetracaine (Pontocaine) hydrochloride in dextrose was administered to produce hypotension in 19 patients, hexamethonium was given to 4, and protoveratrines A and B to 2 patients.

Blood loss was found to average 910 cc. in 29 patients who had radical dissections of the neck utilizing deliberate hypotension and 1,415 cc. in 20 control patients. The average operative time was four hours and 45 minutes with controlled hypotension and three hours and 50 minutes without. In 17 patients who had a radical dissection within the pelvis with induced hypotension, the blood loss averaged 1,870 cc., and in 11 control patients the average loss was 2,805 cc. The average operative time was five hours with deliberate reduction of arterial blood pressure and four hours and 35 minutes in the control patients.

Deliberate reduction of arterial pressure is not employed without considerable risk to the patient. Three of the 90 patients died; one woman died of sudden cardiac arrest that occurred at the completion of a four and one-half hour radical hysterectomy and pelvic node dissection performed with the aid of hypotension produced by trimethaphan camphorsulfonate, and two other patients died in uremia subsequent to prolonged abdominal operations, one performed with hypotension produced by spinal anesthesia and the other with trimethaphan camphorsulfonate-induced hypotension. Deliberate reduction of arterial blood pressure should be undertaken only by those trained in the use of the technique and those fully cognizant of the physiology of hypotension, the pharmacology of the drugs used to produce hypotension, and the limits of the method. While the authors' data neither favor deliberate hypotension nor disprove the value of the technique, they do call for objectivity in determining the ultimate role of the method in surgery.

Megaloblastic Anemia Following Gastric Resection: Report of Ten Cases. R. B. Welbourn, M. G. Nelson and F. J. Zacharias. Brit. J. Surg. **43**:422-428 (Jan.) 1956 [Bristol, England].

The authors describe observations on 10 patients in whom megaloblastic anemia developed after gastrectomy. In five the resection had been total or near-total. There were no complicating factors, and in each absence of the stomach was the probable cause of the anemia. In the other five patients the resection had been partial. In all of these there were either other gastrointestinal lesions or serious dietary deficiencies that probably caused or contributed to the development of the anemia. Peripheral macrocytosis in the absence of significant anemia is stressed as an early sign of the development of megaloblastic anemia after gastrectomy. This is accompanied by changes in the bone marrow consisting of a relative preponderance of more primitive erythroblasts and the appearance of early intermediate megaloblasts. There is need for careful hematological studies in the follow-up of postgastrectomy patients, particularly when the gastrectomy is total.

The response to the parenteral administration of vitamin B_{12} was very satisfactory in four of seven patients. Of the other three patients, one died of intercurrent infection, the second required the addition of orally administered folic acid supplement to obtain optimal response, and the third did not improve on therapy with parenterally administered liver, later combined with folic acid by mouth. In this last case the addition of combined oral therapy was needed to restore the blood picture. One patient with megaloblastic anemia after total gastrectomy received 100 mcg. of vitamin B_{12} daily by mouth for a period of three months. This treatment produced a reticulocyte response lower than the calculated optimum and a rise in the red blood cell count, which became fixed at a suboptimal level despite maintained therapy. Theoretically, orally administered vitamin B_{12} should have been ineffective. The response to oral therapy with vitamin B_{12} in this patient (in whom the stomach had been completely resected) suggests an extragastric source of intrinsic factor. The authors feel that their studies indicate the need of prophylactic treatment with parenterally administered vitamin B_{12} in all patients who have undergone total or near-total gastrectomy.

PEDIATRICS

Corynebacterium Diphtheriae Meningitis: Case Report. F. N. Mitchell and W. W. Waddell Jr. Virginia M. Month. **83**:113-115 (March) 1956 [Richmond, Va.].

A 17-month-old girl who had been in good health prior to admission developed vomiting, anorexia, lethargy, and fever. For the next two days she became progressively worse. On the morning prior to admission she was observed biting her arms. Soon after she suffered a generalized convulsion and later that evening had a similar seizure. A physician administered 450,000 units of procaine penicillin. On the morning of admission her neck was stiff; the skin was pale, hot, and dry, but showed no evidence of rash. The respirations were of the Cheyne-Stokes type, and the lungs were clear to percussion and auscultation. Neurological examination showed the neck to be supple and the spine resistant to flexion. The deep tendon reflexes were hypoactive and the abdominal reflexes absent. Wassermann and tuberculin tests and electrocardiograph were all normal. A lumbar puncture was done and blood cultures made. The initial spinal fluid culture, prior to intensive therapy, grew a diphtheroid organism with morphological and colony characteristics similar to Corynebacteria.

Treatment was begun with intramuscular injection of 400,000 units of aqueous penicillin every two hours and 400 mg. of chloramphenicol every six hours, and 1 gm. of sodium sulfadiazine was given by subcutaneous clysis. The following morning sodium sulfadiazine was given orally in a dose of 300 mg. When the nature of the organism was learned, administration of sulfadiazine was discontinued and 20,000 units of diphtheria antitoxin was given intramuscularly. Administration of chloramphenicol was discontinued. The patient rapidly became afebrile and gradually more alert. Except for isolated episodes of vomiting, the hospital stay was characterized by progressive improvement. The patient was discharged from the hospital apparently well. Subsequently, she was readmitted several times because of hydrocephalus, of which she finally died. In the past, treatment of meningitis caused by Corynebacteria has been largely unsuccessful. The signs and symptoms are not unlike those found in other types of meningitis. In any similar case diphtheria antitoxin should be given as soon as the organism is identified as belonging to the genus Corynebacterium.

Neuropsychiatric Manifestations of Congenital Cardiopathy in Children. J. Bret and C. Kohler. Pédiatrie **11**:59-68 (No. 1) 1956 (In French) [Lyon, France].

Eighty-eight patients with congenital cyanotic cardiopathy were examined psychometrically. There were 31 boys and 57 girls, and their ages ranged from 2½ to 18 years. Seven were examined both before and after surgical therapy. Thirty-nine (44%), of whom only 11 were boys, had normal intelligence quotients. Thirty-two of them were normal from a neuropsychiatric standpoint, while the others had hemiparesis (2 cases), convulsive attacks without electroencephalographic abnormality (2 cases), and behavioral problems (3 cases). Forty-nine children (56% of the entire group) were deficient in intelligence. This group comprised 29 girls and 20 boys. Nine were extremely deficient, with slow ideation and memory lack. Twenty-six had associated personality disorders: puerility or hyperemotivity. Neurological phenomena were present in 18, and included 2 cases of hemiplegia, one of diplegia, one of pseudobulbar syndrome, and 5 of convulsive tendency. The cause of these symptoms and their relationship to the congenital cardiopathy are difficult to understand. Among the various factors suggested in the literature, e. g., changes in the venous system, cerebral anoxia, and hereditary elements, the authors agree with F. H. Adams and co-workers that an important role is played by affective factors in the psychosomatic development. Because of their deformity, the children tend to be overprotected. Their symptoms are worse in direct proportion to the number of examinations and sojourns in hospitals they have undergone at an early age. Of the seven children reexamined after surgical treatment, four showed distinctly improved intelligence quotients, and there seemed to be a speeding-up of the ideomotor processes. There is no way of telling how much of this improvement is due to the establishment of better hemodynamics and how much to parents' minds being relieved.

Prophylactic Sulphamidine in Children Subject to Recurrent Infections of the Upper Respiratory Tract. J. B. Burke. Brit. M. J. **1**:538-541 (March 10) 1956 [London, England].

Prophylactic therapy with sulfonamides was tried in a group of 60 children for whom tonsillectomy was planned because of recurrent upper respiratory tract infections. In the eight-month period between August, 1954, and May, 1955, half the patients received 0.5 gm. of sulfamidine daily and half calcium tablets for the first four months, after which time the agents administered were reversed for the two groups. Thus, each child acted as his own control. Of the 48 who completed the trial satisfactorily, 28 fared better with sulfamidine, 3 fared worse, and in 17 there was no appreciable difference. During the prophylactic therapy 25 acute infections were recorded, absence from school totaled 30 weeks, and the family doctor was called to treat 25 illnesses. The corresponding figures during the administration of the placebo were 60 acute infections, 80 weeks lost from school, and 41 illnesses requiring treatment by the doctor. Tonsillar hypertrophy and cervical adenitis were favorably influenced by chemoprophylaxis, but there was no appreciable effect on nasal obstruction or the incidence of colds. Chemoprophylaxis is worth a trial as an alternative to tonsillectomy in children subject to recurrent upper respiratory infections. There are a number of reasons why it is superior to prophylaxis with penicillin. If instituted promptly, chemoprophylaxis would result in a reduction of the number of children requiring tonsillectomy.

Certain Aspects of Hypothyroidism in Childhood. W. M. Kelsey. Postgrad. Med. **19**:256-261 (March) 1956 [Minneapolis].

A history of retardation of growth and development is the most helpful aid in suspecting hypothyroidism. Hypothyroid children have a characteristic facies, and the skin is usually cold and appears grayish and mottled. The determination of the bone age is helpful. Using the standards of Greulich and Pyle, one can feel fairly safe in excluding hypothyroidism if the bone age is 70% or more of the chronologic age, but if it is below that, other tests should be employed to establish or exclude hypothyroidism. The determination of the protein-bound iodine, if performed properly, making certain the patient has not received organic iodides or thyroid, is a valuable and rapid screening test.

Another very satisfactory indicator of hypothyroidism is elevation of the serum cholesterol level after thyroid withdrawal. Only about 50% of patients with hypothyroidism have elevated serum cholesterol levels. If these patients, with or without hypercholesteremia, are given thyroid, the serum cholesterol level drops. The administration of thyroid is then discontinued, and the cholesterol level rises to higher values than the initial one if the patient has hypothyroidism. The disadvantage of this test is the time involved. The patient should receive at least a grain of thyroid a day for a month, the cholesterol level having been determined before the thyroid therapy and again after a month of therapy. The thyroid is then withdrawn for four to six weeks and another cholesterol level obtained. If the cholesterol level rises above 300 mg. per 100 cc. after thyroid withdrawal, the patient very likely has hypothyroidism. The basal metabolic rate is not an adequate test for thyroid function in any age group. The uptake of radioactive iodine is a fairly satisfactory test, but it has technical limitations. The degree of physical and mental retardation may be minimal even in severe hypothyroidism, and a number of these patients have normal intelligence quotients. Most patients with congenital hypothyroidism, i. e., cretins, probably will not have normal intelligence regardless of the time the therapy is started. In view of the excellent cardiovascular status in childhood, thyroid therapy should be kept at dosages of 2 to 3 grains (0.13 to 0.2 gm.) of thyroid U.S.P. daily through adolescence if one wishes to obtain maximum growth and performance.

Infantile Cortical Hyperostosis (Caffey's Syndrome). J. Kringelbach. Danish med. bull. **3**:14-19 (Feb.) 1956 (In English) [Copenhagen, Denmark].

Infantile cortical hyperostosis occurs in early infancy and is characterized by sudden tender swelling of soft tissue in the head, thorax, or extremities; hyperirritability; and roentgenologically demonstrable cortical hyperostosis in the underlying bones. The duration of the manifestation varies from a few weeks to several months. The course is fluctuating. The pathogenesis is obscure. The prognosis is good. Familial occurrence points to a genetic factor. In some cases blood transfusions seem to have had an effect. Treatment with antibiotics and sulfa preparations has given negative results. Treatment with ACTH and cortisone apparently shortens the duration of the disease and should be tried in new cases. The case described here, believed to be the first reported from Scandinavia, was in a boy aged 4½ months, who was previously well. There was sudden onset, with fever, irritability, swelling of the soft tissue of thorax and head, elevated sedimentation rate, anemia, and leukocytosis. The diagnosis was sepsis and osteomyelitis. Treatment with penicillin, terramycin, achromycin, and blood transfusions was given. The course was marked by exacerbations and remissions. When it was realized that the clinical picture agreed with the description of Caffey's syndrome, reexamination of the roentgenograms confirmed the diagnosis of infantile cortical hyperostosis. The patient was discharged as well after nine weeks' hospitalization. Follow-up a year later showed normal conditions.

The Treatment of Some Forms of Tuberculosis in Infancy with Streptomycin-Isoniazid. M. Malaspina and A. Piccione. Minerva pediat. **8**:73-84 (Feb. 4) 1956 (In Italian) [Turin, Italy].

The authors report 147 cases of pulmonary infection in children that they treated during a three-year period. Their preference for the combination of streptomycin and isoniazid is based on two factors: the combination is so far the most effective therapy, and it is very well tolerated. Complications developed in only three patients with meningitis. There was no significant toxic effect. Streptomycin was administered mostly by injections and isoniazid by the oral route. A complementary treatment consisting of calcium, cholesterol, and vitamins A and D_2 was added to the antibiotics.

The effect of this therapy is clearly illustrated by the good results. Of the patients with meningitis, 81.5% recovered. All patients with other forms of tuberculosis recovered or were at least on the way toward recovery. The periodic radiological studies showed that except in one patient there was no spread of the infection and no new localizations. Patients with exudative pleurisy showed favorable results. Absorption of effusion was rapid. Important sequelae were not observed. The treatment gave good results in severe infections of the lungs. The number of clinical recoveries was high, and the results were permanent. In cases of meningitis, streptomycin-isoniazid was more effective than any previous combination of antibiotics.

Sickle Cell–Spherocytosis Associated with Hemolytic Anemia. M. V. de Torregrosa, A. Ortiz and D. Vargas. Blood **11**:260-265 (March) 1956 [New York].

The occurrence of anemia associated with the rare combination of sickle cells and spherocytes is reported in a 5-year-old girl. The deeply jaundiced child showed all the clinical and hematological features of a chronic hemolytic anemia on a hereditary basis. Spherocytosis and increased hypotonic fragility of the red blood cells were found in the patient's father, paternal grandmother, and brother. Paper electrophoretic studies revealed normal adult and fetal hemoglobin values in the father, brother, and paternal grandmother. Sickle hemoglobin was present in the patient's and in the mother's blood. In the presence of both sickle-cell anemia and familial spherocytosis with increased hypotonic fragility of the red blood cells, it was decided empirically that the most important factor was probably the hereditary spherocytosis. Therefore splenectomy was performed. Microscopic examination of the spleen revealed intense generalized congestion of the splenic pulp with partial obliteration of the outlines of the sinuses. No hemosiderin pigment was found. A formalin preparation from smear of the splenic pulp was inadequate because the blood was hemolyzed. The postoperative course and convalescence were uneventful. The hemoglobin returned to near normal, and no further crises occurred during a seven-year follow-up. The spherocytosis and increased fragility of the erythrocytes persisted to a lesser degree after the splenectomy; the sickling of the red blood cells was unaffected. The electrophoretic findings and the clinical course after the splenectomy in the patient indicated that the sickle-cell anemia acted as an innocuous hereditary trait superimposed on a moderately severe type of hereditary spherocytosis.

UROLOGY

The Current Status of the Chemotherapy of Renal Tuberculosis. J. K. Lattimer and A. L. Spirito. J. Urol. **75**:375-379 (March) 1956 [Baltimore].

The authors reviewed the number of new cases of renal tuberculosis treated in each of the last five years in some Veterans Administration hospitals and at the Presbyterian Hospital in New York City. Only among children with tuberculosis (miliary and other) did the authors find a decline in the incidence of new patients with urine cultures positive for Mycobacterium tuberculosis. They have seen no new cases of urinary tuberculosis on their pediatric urological service in the years 1953, 1954, and 1955, whereas there were always a few previously. This decline has occurred since the adoption of the "triple drug" therapy for miliary tuberculosis.

Over the past eight years, various chemotherapeutic regimens using streptomycin alone; isoniazid alone; streptomycin plus aminosalicylic acid; and the combination of streptomycin, aminosalicylic acid, and isoniazid have been tested for effectiveness on groups of patients with renal tuberculosis who were comparable in all respects. Triple-drug therapy (isoniazid, streptomycin, and sodium aminosalicylic acid), given for one year,

appeared to be more effective than double-drug therapy (streptomycin plus aminosalicylic acid) in the treatment of renal and prostatic tuberculosis, and is the current treatment used by the authors. Bed-rest and a high vitamin intake were combined with the chemotherapy. Prolongation of the treatment to 18 or 24 months may be even more effective.

Chlorpactin 90, a new drug, was found effective in ameliorating the symptoms from tuberculous ulcers of the bladder. This is a topical medicament that has a detergent action on the ulcers and also releases chlorine (as hypochlorous acid) in tuberculocidal concentrations. The symptoms from chronic tuberculous cystitis were markedly improved in most cases by the use of this medicament for bladder irrigation. These irrigations were moderately irritating and had to be given several days apart. It was discovered that conventional methods used for "sterilizing" cystoscopes did not kill Myco. tuberculosis within one hour. It therefore appeared conceivable that cross contamination between patients might occur if a cystoscope were used on a tuberculous patient and then used again on an uninfected patient within one hour. It was demonstrated, by tests, that immersion in a 10% formalin solution for a period of 5 minutes would kill Myco. tuberculosis in cystoscopes, provided that the cystoscopes had been washed with soapy water previously and that all stopcocks and lumina were open. It did not harm the cystoscopes.

Aneurysm of the Renal Artery. R. M. Nesbit and W. B. Crenshaw. J. Urol. **75**:380-383 (March) 1956 [Baltimore].

The characteristic signet-ring or halo-shaped calcification just medial to the renal pelvis is pathognomonic of aneurysm of the renal artery. Only about 25% of all cases display this calcification. This one-fourth of the cases should be diagnosed preoperatively. The other 75% are discovered secondarily, either during surgery for other cause or at the time of rupture of the aneurysm. The symptom complex from renal artery aneurysm is varied and unreliable. The authors were impressed by the presence of hypertension, as it was this sign that led to diagnostic studies in both of the patients presented in this paper.

Immediate surgical excision of the aneurysm is the treatment of choice. Usually this means nephrectomy, but several conservative surgical excisions have been done when the aneurysm was in a small branch of the renal artery. With nonsurgical management, the aneurysm eventually ruptures and death follows. The two patients presented constitute the 84th and 85th true renal artery aneurysm and 119th and 120th reported renal artery aneurysms. The first of the two patients was a woman aged 25 who was hospitalized because of hypertension and occipital headaches. Pyelography revealed a normal renal collecting system, but there were bilateral calcified opacities medial to the renal pelves and overlying the renal vessels. On the right, the calcification had the appearance of a hollow calcium crust with two circular markings, one at either end. On the left, a classic signet-ring shadow of aneurysm could be seen. Stereoscopic and oblique views placed these opacities in the renal vessels. A diagnosis of bilateral renal artery aneurysm was made. The woman had a fatal cerebrovascular accident while in the hospital for induction of labor in the seventh month of pregnancy. If bilateral renal artery aneurysm occurs at the present time, the feasibility of replacement of the aneurysms with either plastic or homologous vessel grafts should be considered.

The second patient was a 52-year-old woman in whom pyelograms in 1939 had revealed a rounded density just above the tip of the right ureteral catheter and probably outside the kidney. In retrospect this density must have been beginning calcification in a renal aneurysm. In 1953, the patient underwent a cholecystectomy elsewhere, without relief of her right flank pain. Several months later she was found to be hypertensive, and excretory urograms revealed the characteristic signet-ring calcification just medial to the right renal pelvis with some compression of the pelvis. The diagnosis of right renal artery aneurysm was entertained, and the patient was asked to return to the hospital for further investigation. She failed to return until February, 1955, when excretory urography again revealed the pathognomonic signet-ring calcification in the region of the right renal artery. Aortography was not done because of the danger of rupture. Right nephrectomy was carried out, and a 2-cm. saccular aneurysm of the main trunk of the renal artery was removed. The aneurysm was noted to arise from the bifurcation of the artery, making conservative surgery impossible. The blood pressure fell after nephrectomy.

Atonic Neurogenic Bladder in Porphyria. A. G. Redeker. J. Urol. **75**:465-469 (March) 1956 [Baltimore].

Redeker presents the histories of two women, aged 33 and 37, who had acute toxic porphyria and in whom urinary retention appeared to be a part of the acute porphyric attacks. The results of the cystometric studies were consistent with the diagnosis of an atonic neurogenic bladder. No obstructive uropathy could be found. Since some evidence of peripheral neuropathy is common in acute toxic porphyria, it is suggested that the atonic bladder in these patients was a manifestation of porphyric involvement of the autonomic nervous system. It is interesting that no other evidence of neuropathy was observed in either of these patients. However, hypertension was present in one, and Kezdi has suggested that the transient hypertension in acute porphyria may be secondary to porphyric polyneuritis. Involvement of the autonomic nervous system has been suggested as one cause of the abdominal pain in porphyria, and an unidentified pigment deposition in autonomic ganglia has been observed at autopsy. Although there is evidence of autonomic nervous system involvement in many cases of acute porphyria, an atonic neurogenic bladder has not previously been described in this disease.

A Study of 2,678 Patients with Initial Carcinoma of the Bladder: II. Survival Rates in Relation to Therapy. F. K. Mostofi. J. Urol. **75**:492-500 (March) 1956 [Baltimore].

The 2,678 patients reviewed in this paper are the same who were investigated earlier in a study of survival rates. This report is concerned with a comparison of survival and "tumor-free" rates of patients having various grades of carcinoma of the bladder treated by radiation alone, "open surgery" with or without radiation, and "closed surgery" with or without radiation; and with the comparison of survival and "tumor-free" rates of patients having various grades of carcinoma treated by radiation alone with those treated by resection alone. "Open surgery" refers to cystotomy and "closed surgery" to operations performed by the transurethral approach.

Comparison of the survival rates of patients treated by radiation and those treated by open and by closed surgery revealed that, in patients with papillary and infiltrating carcinoma, grade 3, and infiltrating carcinoma, grades 2 and 3, the rates were generally better for those treated by open surgery and radon than by any other method. Patients with papillary carcinoma grade 1 treated by open surgery without radiation had better over-all survival rates than those treated by closed surgery with or without radon. In addition, although patients with papillary noninfiltrating carcinoma, grade 2, treated by closed surgery with radon had the better survival rates, those patients treated by closed surgery without radon had lower survival rates than those treated by open surgery without radon. While for patients with papillary and infiltrating carcinoma, grade 3, and infiltrating carcinoma, grades 2 and 3, higher five-year tumor-free rates were observed in patients treated by open surgery and radiation, for noninfiltrating papillary carcinoma, grades 1 and 2, the rates were better for patients treated by closed surgery and radon.

Comparing the survival rates of patients treated with radon implantation alone with the survival rates of those treated by segmental resection alone, the author found that in general the over-all rates were better for patients treated by segmental resection alone than by radon implantation alone. As regards the five-year tumor-free rates for these two groups, he says that on the whole, the rates were better for those treated by segmental resection than by radon implantation. While patients treated surgically seemed to fare better on the whole than patients treated by radiation, caution is urged in the interpretation of the results, as the numbers in each category are small and the factors that determined the type of therapy are unknown.

Simplified Method for Evaluation of Left Suprarenal and Gastric Masses. B. R. Harrow. J. Florida M. A. **42:**732-734 (March) 1956 [Jacksonville, Fla.].

Intravenous urography is frequently employed for the detection of a damaged or displaced kidney or of the presence of masses in the adrenal area. A well-delineated mass may be seen at varying distances above the left kidney, but it is well known that in most cases this represents a collapsed stomach. This density may persist in the same size, shape, and position on subsequent roentgenograms. It may persist even when roentgenograms are taken with the patient in different positions. It is therefore common practice to perform presacral gas injections in order to prove whether such a shadow represents an actual retroperitoneal tumor. However, fatal gas embolism and retroperitoneal infection have been known to result from presacral air insufflation.

The author found that it is much simpler to interpret the left suprarenal shadow if the patient is given orally 6 to 10 ounces of a carbonated beverage, which releases carbon dioxide rapidly and greatly distends the stomach. The suspected suprarenal mass, if it represented a collapsed stomach, then disappears. The carbonated beverage can be given just before the late upright film for renal ptosis; thereby, no additional films other than those used in the routine intravenous pyelography need be used.

Giving from 6 to 10 ounces of a carbonated beverage will occasionally reveal a very large, fungating, polypoid lesion or one producing a very large ulceration in the stomach. Although large, this type of tumor may not metastasize until very late and therefore is resectable and possibly curable. By the time a polypoid tumor produces symptoms, it is usually massive and then is inoperable because of extension into neighboring structures. Tremendous numbers of intravenous urograms are performed daily by general practitioners and specialists. If each used this procedure (giving a carbonated beverage), which costs only five cents, then a few more asymptomatic or unsuspected neoplasms of the stomach could be discovered.

Principles Developed from the Use of the Artificial Kidney for Interpretation of Electrolyte Disorders of Acute Uremia. J. Hamburger and G. Richet. Rev. franç. études clin. et biol. **1:**39-56 (Jan.) 1956 (In French) [Paris, France].

This report is based on 60 dialyses with the Kolff-Merrill artificial kidney practiced in 42 anuric patients. Systematic determination of serum levels of sodium, potassium, calcium, chlorine, bicarbonates, sulfates, and phosphates was performed before and after each dialysis. The disturbance in body fluids involved in the syndrome of acute uremia are not limited to nitrogen retention. Some of the electrolyte disturbances are remarkably constant and intense, namely, decrease in calcium, decrease in chlorine, increase in magnesium, and even greater increase in sulfate levels. There is individual variation in the following manifestations: changes in serum sodium and potassium levels and increase in phosphate content; the amount of bicarbonates is usually markedly decreased but is occasionally normal or above. All these imbalances are corrected by the artificial kidney, the best method of dialysis now available.

The clinical syndrome of acute uremia is remarkedly benefited by therapy with the artificial kidney. The general condition is transformed; nausea, vomiting, and abdominal meteorism disappear; consciousness is regained and convulsions may be controlled; and certain cardiovascular disorders may be cured. The correlation between clinical and laboratory data in patients treated with the artificial kidney emphasizes the fundamental importance of the part played by disordered electrolyte metabolism in acute uremia. Retention of sulfates and phosphates as well as anion imbalance are evidently factors of greater importance than was formerly believed. Magnesium retention appears to play a role in disturbances of consciousness and in an electrocardiographic abnormality characterized by lengthening of the corrected Q-T interval. Certain symptoms, notably the convulsions and abdominal manifestations, are definitely related to electrolyte disorders, since they disappear after dialysis. In the case of an acute abdominal syndrome, dialysis is a means of differential diagnosis from a visceral lesion that will require surgical treatment. However, it is not yet known with which electrolyte change these symptoms are associated.

OPHTHALMOLOGY

Ophthalmic Problems in Diabetes. L. W. Statti. Pennsylvania M. J. **59:**331-333 (March) 1956 [Harrisburg, Pa.].

Sudden changes in refractive errors should make the ophthalmologist very suspicious of diabetes. As the blood sugar concentration varies, the refractive state of the eye may change from hypermetropia to myopia and vice versa. These changes have been attributed to fluid entering the lens osmotically causing myopia. Under treatment the condition is reversed. Glasses should not be prescribed until at least three to six weeks after the refractive state has been stabilized. Double vision may likewise be the first symptom of diabetes, but it is not very common. Recovery is slow, usually taking about three months. During that time the patient should wear an occluder. Newly formed vessels may be noted about the sphincter of the iris. This condition is called rubeosis iridis diabetica. The presence of these vessels signifies a poor prognosis for both vision and retention of the globe. Lens changes in the older diabetic are treated as ordinary senile cataracts with the same results. Optic nerve changes (atrophy) are due to vascular changes rather than to increase in blood sugar. The degree of diabetic retinopathy is related to the duration of the disease and not to its severity. Visual damage depends on macular involvement. Treatment of the ocular complications of diabetes is the treatment of the diabetes itself. Proper dietary control and insulin regulation is the only effective treatment. The value of rutin, hesperidin, ascorbic acid, vitamin P complex, and testosterone has not been determined.

Cast-Like Fungus Obstruction of the Nasolacrimal Duct: Report of a Case. J. R. Wolter, T. Stratford and E. R. Harrell. A. M. A. Arch. Ophth. **55:**320-322 (March) 1956 [Chicago].

A case of unilateral epiphora due to obstruction of the nasolacrimal duct by a cast-like formation is described. When the patient, a 23-year-old woman, presented herself at the ophthalmologic outpatient clinic, the epiphora had existed for two weeks. The ophthalmologic examination was negative with the exception of an obvious epiphora from the right eye with an associated hyperemia of the conjunctiva. Irrigation of the right nasolacrimal passageways was attempted. There was at first regurgitation of a small amount of white, curdy material from the upper punctum. An effort to probe the duct met with unyielding resistance and severe pain at 38 mm. Further attempts at irrigation and probing were made, without success, until finally a small amount of fluid was irrigated through into the nasal cavity. The patient was given a solution of 30% sulfacetamide (Sulamyd) sodium to instill in the right eye four times a day and was instructed to follow instillation of the drops with massage of the nasolacrimal duct. Two weeks later the patient returned stating that she had experienced a recurrence of epiphora shortly after her clinic visit. This had persisted until the preceding day, when, after the use of the drops (sulfacetamide, 30%) and massage, she noted the sensation of fluid passing down into her nose. She then blew her nose and recovered a small cast, which was followed by a small amount of blood. Immediately thereafter she was relieved of her epiphora.

The patient put the cast into alcohol for fixation. This made it possible to study the cast histologically but, unfortunately, prevented cultural examination. The cast was 9 mm. long and 2.5 mm. in diameter. Histological examination demonstrated the presence of fungi, and Candida albicans was considered the most likely etiological agent. The authors mention a paper by Fine and Waring in 1947 in which two similar cases were reported.

THERAPEUTICS

Treatment of Unexpected Cardiac Arrest by External Electric Stimulation of the Heart. P. M. Zoll, A. J. Linenthal, L. R. Norman and others. New England J. Med. **254:**541-546 (March 22) 1956 [Boston].

A method of external electrical stimulation that arouses the heart from ventricular standstill and maintains an externally paced ventricular rhythm for as long as necessary has been

developed by the authors. The electrical stimulator functions like a natural intracardiac pacemaker but is under complete control. The instrument is portable and should be attached before anesthesia; then stimulation can be started within a few seconds. The electrodes should be smeared with electrode paste and held firmly with plastic handles 5 cm. (2 inches) to 8 cm. (3 inches) apart on the precordium. The frequency of stimulation may be set between 60 and 100 per minute. The amplitude of stimulation should be raised quickly to an effective level or as high as possible. Effective stimulation will be recognized immediately by return of arterial pulses; it must then be continued as long as necessary for spontaneous cardiac activity to reappear.

Eight patients between the ages of 3½ months and 68 years with cardiac arrest occurring unexpectedly during various surgical procedures carried out with the aid of anesthetics, including cardiac surgery in three, abdominal surgery in one, thyroidectomy in one, cholecystectomy in one, gastrectomy in one, and during diagnostic pericardiocentesis in one, were resuscitated with the aid of the electric pacemaker. Five recovered completely. Resuscitation was attempted but failed in nine patients in whom cardiac arrest occurred unexpectedly during jugular puncture, intravenous pyelography, bronchography, cardiac catheterization, endotracheal intubation, hip nailing, cholecystectomy, and cardiac surgery. In two of these the circulatory arrest was caused by ventricular fibrillation, which terminated with cardiac massage or electric countershock applied directly to the heart, but both patients died. In the remaining seven patients electrical stimulation was applied within 5 to 100 minutes of the onset of arrest, usually after prolonged, ineffective massage. These failures emphasize that the responsiveness of the heart to stimulation diminishes progressively with continued anoxia and that effective ventricular beats cannot be stimulated by the pacemaker during ventricular fibrillation.

A program of resuscitation from unexpected cardiac arrest in the operating room is proposed that emphasizes the use of electrical stimulation of the heart as the initial resuscitative measure before resort to thoracotomy and cardiac massage. Since delay in recognition or treatment of arrest is fatal and since there is a three-minute limit for resuscitation, resuscitative procedures should not be delayed to obtain an electrocardiographic tracing, although electrocardiographic identification of the cardiac mechanism is useful. Immediately upon the recognition of the arrest the external pacemaker should be applied, and one should attempt to stimulate the heart mechanically by slapping the precordium forcefully or by massaging the heart through the diaphragm when the abdomen is open. If the cardiac pacemaker fails to resuscitate the patient within one minute of the moment of arrest, the chest must be opened promptly and the heart massaged. If ventricular fibrillation persists for more than a few minutes despite effective massage, measures should be undertaken to restore an effective ventricular rhythm by electric shock or by drugs. Ventricular standstill may persist despite effective massage, may recur after massage, or may follow defibrillation. Electric stimulation may then be applied directly to the heart by needle electrodes, and epinephrine or calcium gluconate may be injected into a cardiac chamber. Artificial respiration with oxygen is always necessary during these resuscitative procedures. Routine application to all anesthetized patients of a cardiac monitor, which should register the electric activity of the ventricles by an audible signal of each heart beat and should also sound an alarm on the onset of cardiac arrest, would permit immediate recognition of cardiac arrest and increase the likelihood of complete recovery.

Treatment of Myeloid Leukemia with 6-Mercaptopurine (Purinethol). D. Remy. Deutsche med. Wchnschr. **81:**301-304 (March 2) 1956 (In German) [Stuttgart, Germany].

Remy used 6-mercaptopurine (Purinethol) in the treatment of 10 patients with granulocytic (myeloid) leukemia. Five of these patients had acute to subacute forms of the stem cell type of leukosis and five had chronic forms of myelosis. Of the five patients with stem cell leukemia, two, in whom the leukemia took a very acute course, derived no benefit from treatment with 6-mercaptopurine. The other three patients, with acute myeloblastosis, obtained considerable improvement, in that the acute course became considerably retarded. There was subjective improvement, reduction in cell counts, and retrogression of mucosal lesions and of lymph node enlargement. These patients were also treated with blood transfusions, with corticotropin, and with antibiotics. Complete remissions were not obtained. The qualitative cell picture in blood and marrow remained unchanged, but the total number of cells became definitely reduced and this was accompanied by a general improvement.

In the five patients with the chronic forms of myelosis, treatment with 6-mercaptopurine in doses of from 150 to 200 mg. always effected a reduction in the cell count. This effect usually became evident in the fourth week of treatment and was accompanied by subjective improvement, increase in weight, and retrogression of the splenomegaly and of the lymph node enlargement. No complications resulted during treatment, and 6-mercaptopurine is better tolerated than other drugs. Although the number of leukocytes sometimes decreased to subnormal values, leukopenia never threatened. Erythropoiesis and thrombocytopoiesis likewise were not impaired by 6-mercaptopurine; on the contrary, they improved in the course of the general improvement. This suggests that the drug might be used in a leukemic disorder. The use of 6-mercaptopurine seems to be indicated in acute myeloblastic exacerbations in the course of chronic leukemia. Resistance to the drug may develop in the course of prolonged treatment, but there is no cross resistance between 6-mercaptopurine and urethan (ethyl carbamate) or between 6-mercaptopurine and Myleran (1,4-dimethanesulphonyloxybutane). This indicates that these drugs have different points of attack.

In Vitro and Clinical Effects of Urethane Plus Triethylene Melamine on Human Breast Cancer. M. M. Black and F. D. Speer. Surg. Gynec. & Obst. **102:**420-426 (April) 1956 [Chicago].

The authors had gained the impression in earlier studies that the use of the combination urethan (ethyl carbamate) plus triethylene melamine (TEM) or methyl-bis(beta-chlorethyl)-amine (HN 2) might be more effective than either agent alone in the treatment of cancer of the breast. They report on measurements of the in vitro dehydrogenase activity of tissue slices from 94 patients with mammary carcinoma. Determinations were made of the effect of urethan and TEM singly and in combination on such in vitro metabolic activity. The clinical effects of this chemotherapeutic combination were studied in 21 cases. In seven of these both clinical and in vitro measurements were made. The data obtained indicated that therapy with urethan and TEM was capable of producing striking clinical benefit in some cases of human mammary cancer. Such beneficial effects appeared to be related to and predicted by the in vitro effects of these agents.

PATHOLOGY

Papillary Tumors of the Thyroid. W. Kemp and R. Tennant. Connecticut M. J. **20:**177-182 (March) 1956 [New Haven, Conn.].

All papillary tumors of the thyroid in the surgical pathology files of the Hartford Hospital from 1935 to 1952 were reviewed and their microscopic features noted, particular attention being paid to the degree of nuclear anaplasia, of mitoses, and of capsular, blood vessel, and lymphatic invasion. The histories of these patients were studied, with age, sex, duration of disease, and type of therapy used being noted. The subsequent course of these patients was followed. The 36 patients studied fell into three groups. Group A included 22 in whom the tumor was limited to the thyroid gland at time of first treatment with no evidence of metastases found on follow-up; in the 5 patients of group B disease was confined to the thyroid gland when first treated, but lymph node metastases developed later; and in the 9 patients of group C disease was present in cervical nodes when they were first treated. Thirty of the 36 patients were women.

The pathological features, clinical behavior, and treatment of this group of patients are discussed. Adequate follow-up was obtained in all but five of the patients. Other investigators have divided papillary thyroid tumors into (1) benign papillary adenomas; (2) papillary carcinoma (malignant papillary adenoma); and (3) capillary adenocarcinoma, basing classification on the presence or absence of capsule or lymphatic invasion in (1) and (2) and actual lymph node involvement in (3). The present

authors found it impossible to predict the subsequent course of the patients with tumors limited to the thyroid at the time of initial treatment on the basis of histological appearance. Lymphatic invasion or capsule invasion in the primary tumor was present in a large number of cases in both groups A and B at the time of initial treatment, yet no node involvement has occurred in group A patients to date. Furthermore, the degree of anaplasia was essentially the same in all three groups and offered little aid in classifying these tumors. All these neoplasms should be classified as low grade papillary carcinomas, and further attempt at division into benign and malignant is artificial.

Studies on the Proteins of Myeloma: I. Critical Study of Techniques of Identification of Bence-Jones Protein and Their Diagnostic Value. P. Burtin, L. Hartmann, R. Fauvert and P. Grabar. Rev. franç. études clin. et biol. **1:**17-28 (Jan.) 1956 (In French) [Paris, France].

The authors studied urine samples from 24 patients with plasma cell (multiple) myeloma by three different methods: thermal precipitation, filter-paper electrophoresis, and Ouchterlony's immunochemical method. This last is the most dependable. Bence-Jones protein was found in every case but one by the cross reaction it gives to normal gamma globulins. Six patients among those with the greatest concentration of Bence-Jones proteinuria had a similar, perhaps the identical, abnormal protein in their serums. Three different groups of Bence-Jones protein were encountered in the immunochemical studies. Traces of Bence-Jones protein are present in the urine of patients with bone diseases other than plasma cell myeloma, notably in osseous metastases.

Carcinoidosis: Review and Report on Two Cases of Metastasizing Carcinoid of Small Intestine. J. Molander. Nord. med. **55:**96-100 (Jan. 19) 1956 (In Swedish) [Stockholm, Sweden].

Up to February, 1955, reports of 24 cases of metastasizing carcinoid of the small intestine had been published. The first of the two cases described here presented the typical picture of the new syndrome, with metastases to lymph nodes and liver, pulmonary stenosis, and the characteristic patchy cyanosis. In the other case there were metastases in mesenteric lymph nodes but not in the liver, no signs of heart disease and no skin changes. In both cases the concentration of 5-hydroxyindoleacetic acid in the urine was increased, which in the second case pointed to carcinoid tissue remaining after radical operation. Determination of the 5-hydroxyindoleacetic acid in the urine may permit diagnosis of carcinoid in less advanced cases.

Determination of 5-Hydroxytryptamine Level in Blood Serum and Urine in Cases of Carcinoid Tumor. B. Pernow and J. Waldenström. Nord. med. **55:**100-102 (Jan. 19) 1956 (In Swedish) [Stockholm, Sweden].

The diagnosis of malignant carcinoid was established in six out of seven patients by biopsy or at autopsy. Increased amounts of 5-hydroxytryptamine in the blood and in two cases in the urine were observed during attacks of flushing. Increased urinary excretion of 5-hydroxyindoleacetic acid in carcinoidosis was confirmed.

Arteriosclerosis in the Elephant. S. Lindsay, R. Skahen and I. L. Chaikoff. A. M. A. Arch. Path. **61:**207-218 (March) 1956 [Chicago].

The animal studied was a female Indian elephant that had lived in the San Francisco Zoological Garden since 1925 and was believed to be at least 47 years of age at the time of death. Its diet had consisted of oat hay supplemented by bread, lettuce, and carrots and of peanuts contributed by visitors to the zoo. Except for occasional bouts of constipation, the animal had never been ill and appeared healthy the night before death. On the morning of death, the elephant was found lying on its left side. Respirations ceased suddenly. The autopsy was performed 19 hours after death. The course of illness and the autopsy findings indicate that the immediate cause of death was acute myocardial failure causing terminal pulmonary congestion, edema and hemorrhage, and hemorrhagic pericardial effusion. The cardiac failure appeared to have resulted from diminished coronary blood flow due to severe arteriosclerosis of many small coronary arterial branches. Severe aortic arteriosclerosis was observed and was characterized by intimal thickening and extensive medial degeneration and calcification. Similar disease involved the major coronary and pulmonary arteries.

The intimal lesions of the small coronary arteries of the elephant, although subtotally occluding many vascular lumens, were devoid of lipid. Medial disease associated with calcification was a prominent feature of the sclerotic process in the aorta and, to a slighter degree, in the major coronary arteries. This medial process was also regarded as resulting from medial elastic degeneration leading to medial accumulations of mucopolysaccharide and collagen. Although a little lipid was present in the intimal and medial lesions of these large muscular and elastic arteries, lipid deposition appeared to be clearly a secondary process and not concerned in the early development of the arterial disease. Cholesterol was not demonstrated in the lesions. Prominent calcification of the media and, to a slighter extent, of the intima seemed secondary to the arterial elastic and muscular degeneration rather than to lipid infiltration. This calcific medial disease resembled aortic medial sclerosis in the human being.

On the Origin of the Pulmonary Hyaline Membranes. H. N. Hadders and M. N. J. Dirken. J. Path. & Bact. **70:**419-425 (Oct.) 1955 [Edinburgh, Scotland].

The formation of pulmonary hyaline membranes was studied experimentally in rats by injecting various substances into the lungs through the thorax. The injection of amniotic fluid into the lungs failed to produce hyaline membranes, except locally near the injection site, when the fluid had been concentrated 10 to 20 times. The injection of rabbit serum yielded hyaline membranes in a number of rats surviving for from 3 to 22 hours. Hyaline membranes were found in the lungs from 6 to 18 hours after the transthoracic injection of histamine and Euphyllin. These experiments support the view that hyaline membranes in the human infant may arise from plasma transudation, probably at the time of birth and the establishment of respiration, and are not the result of inspiration of amniotic fluid.

Further Studies on Induction and Growth of Thyrotropic Pituitary Tumors in Mice. J. N. Dent, E. L. Gadsden, and J. Furth. Cancer Res. **16:**171-174 (Feb.) 1956 [Chicago].

Experimental studies were made on 15 mice subjected to thyroidectomy. They were given neither hormone therapy nor radioactive iodine, I^{131}, until natural death occurred after 290 days or later. Eleven well-matched control animals were killed after the experimental animals had died. Spontaneous pituitary tumors or distinct pretumorous changes have not been seen in normal C57BL mice, either in this small control group or in earlier larger series totaling well over 100 mice of comparable age. In contrast, pituitary adenomas developed in two-thirds of the thyroidectomized mice of the present series. In this series the thyroid was removed surgically rather than by irradiation, as in earlier experiments. These findings support the hypothesis that mere disruption of the thyroid-pituitary feed-back mechanism is sufficient to initiate development of pituitary tumors.

Enhancement of Mammary Fibroadenomas in the Female Rat by a High Fat Diet. J. Benson, M. Lev, and C. G. Grand. Cancer Res. **16:**135-137 (Feb.) 1956 [Chicago].

In the course of an experiment related to the production of arteriosclerosis in the Sprague-Dawley rat, the authors put animals of various ages on diets aimed at lowering or raising the serum lipid levels. Fibroadenomas of the breast developed in female rats, and this forms the basis of the present study. These tumors occurred only in animals 18 months of age or over. There was an increased occurrence of tumors in animals fed a high-fat diet. This is considered to be due to hypernutrition and the specfic action of fat on tumor genesis. Serum lipid levels were higher in the experimental animals, suggesting that hyperlipemia is related to tumor genesis. A higher incidence of cancer has been found in obese persons than in those of normal or subnormal weight. In mice, diets high in fat or caloric content enhanced the formation of spontaneously occurring and experimentally induced neoplasms. In rats prolongation of life, retardation of spontaneous tumor development, and delay in onset of pathological aging were observed with prolonged undernutrition.

BOOK REVIEWS

The Cervical Syndrome. By Ruth Jackson, B.A., M.D., F.A.C.S., Clinical Assistant Professor of Orthopaedic Surgery, Southwestern Medical School of University of Texas, Dallas. Publication number 268, American Lecture Series, monograph in American Lectures in Orthopedic Surgery. Edited by Robert J. Joplin, M.D., Instructor in Orthopedic Surgery, Harvard Medical School, Boston. Cloth. $4.75. Pp. 130, with 50 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

For at least 20 years Ruth Jackson has been talking and writing about the cervical syndrome. The increasing number of patients who complain of pain in the neck, shoulder, and arm or of pain in the neck associated with headache makes this a very timely book. An ever-increasing number of patients are victims of neck injuries produced when one car is struck from the side or from the rear by an oncoming car and the passengers in the first car are subjected to a sudden jolt. These have been designated "whiplash" injuries, and they are creating new and difficult problems for the physicians who treat them. This monograph should be of great help to physicians and their patients. In the foreword, Dr. Arthur Steindler states that "one cannot help but credit Dr. Jackson of having developed, on the foundation of basic facts, a clear cut pattern of logical coherence between the manifestation and background which should do much for the understanding of a most difficult clinical entity." Besides the introduction, there are chapters dealing with anatomy; the mechanism of cervical nerve root irritation; etiology; diagnosis; differential diagnosis; and treatment. Each subject is well presented. The illustrations are well chosen and clearly reproduced. Every physician who deals with the cervical syndrome and is faced with the problem of trying to relieve the pain should welcome this book.

Skin Surgery. By Ervin Epstein, M.D., Assistant Clinical Professor of Medicine (Dermatology), Stanford University Medical School, San Francisco. Cloth. $7.50. Pp. 228, with 242 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1956.

The skin represents the first line of defense of the body against environment, even against many insults disguised and basking in the aura of the word "surgery." In the first part of this book, entitled Cold Steel Surgery, the author states that it is doubtful if "do-it-yourself kits" will attain popularity for surgical procedures. Since we deal with health and life, the more important scalpel surgery should be performed by surgeons. Since, however, minor surgery and destruction in situ will be performed in other specialties, insight into principles on which success depends should be understood by all. To this end, Dr. Epstein's book should serve a useful purpose. Basic principles of general surgery and general principles of reconstructive surgery are outlined in the chapters prepared by surgeons. They discuss some of the more major excisions, restorations, and replacement of tissue loss by skin grafting. One thing that will offend many readers is the awaiting of healing by granulation and scar formation for several weeks when clean excision and immediate closure with local tissues or by skin grafting would accomplish superior results in days instead of weeks. Fortunately, the limitations of so-called dermabrasion (sandpaper surgery, surgical planing) are admitted and some of its dangers described. Fortunately also, the author states that both the satisfaction and dissatisfaction with tattooing vary tremendously with the patient and operator. The chapter on the technique of Mohs (the chemosurgical method for the microscopically controlled excision of cutaneous cancer) reports the commendable patience and conscientiousness of its originator, but it reminds one of the man who cut his dog's tail off a little bit at a time so it would not hurt so much. Diagrams and illustrations are excellent, and the order and format of the book are good. It should broaden the perspective and insight of many workers who might otherwise do more harm than good with the destructive techniques described.

1956 Medical Progress: A Review of Medical Advances during 1955. Morris Fishbein, M.D., editor. Cloth. $5.50. Pp. 389. Blakiston Division, McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 36; 95 Farringdon St., London, E.C.4, England, 1956.

The important contributions in the various fields of medicine during 1955 are reviewed by 29 specialists. The Salk vaccine against poliomyelitis, the new tranquilizing drugs, and a new substance to be taken by mouth for the treatment of diabetes are given prominence. Advances in surgery, gynecology, ophthalmology, orthopedic surgery, and other special fields are treated in appropriate chapters. The role of such important new drugs as prednisone and prednisolone is covered in a special chapter on endocrinology. There is some unavoidable repetition inherent in a book written by several authors. For instance, the Salk vaccine is considered in a special chapter of its own but is also reviewed in chapters on general medicine and new drugs. In general, the coverage is good so that the general practitioner reading this book should get a fairly good idea of the important advances in medicine during the past year. A bibliography is provided at the end of each chapter.

A Paris Surgeon's Story. By Dr. Charles F. Bove, K. L. H., with Dana Lee Thomas. Foreword by Leland Stowe. Cloth. $4.50. Pp. 306. Little, Brown & Company, 34 Beacon St., Boston 6, 1956.

Many books have been written by doctors about doctors, about medicine, about patients, and about the world we live in, but this book includes all these aspects. It is as vivid and dramatic as any book can be. Moreover, it is a true story of an extraordinary life by an extraordinary person. Through its pages there pass in sharp outline many of the great human figures well known in art, science, literature, philosophy, economics, finance, and diplomacy. Born in Brooklyn, Dr. Bove was steered into medicine by his family physician. Then came World War I and a commission in the United States Army. Well prepared for surgery, he had more than abundant opportunity for experience, often working around the clock. The American Hospital in Paris was his workshop for 25 years, during which time he met and served countless Americans as well as others from every land and clime. The story of Lindbergh's arrival in Paris outdoes anything set down by other reporters. The extraordinary personality of the Spy, Mata Hari, her life and many loves, and her death before a firing squad make one tingle. The narrative begins with Dr. Bove's coronary thrombosis, which came on after his return to New York and following a trying operation. That was in 1941. His recovery should give comfort to cardiac worriers, for he still is going strong at this writing (April, 1956) in daily practice at Patchogue, Long Island. This compelling book is altogether admirable.

The Role of Algae and Plankton in Medicine. By Morton Schwimmer, M.D., Clinical Assistant in Medicine, New York Medical College, and David Schwimmer, M.D., F.A.C.P., Assistant Professor of Medicine, New York Medical College, New York. Cloth. $3.75. Pp. 85. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1955.

This well-documented monograph summarizes the current status of knowledge concerning the medical uses of algae and plankton. While the nutritional and medicinal uses of seaweed are reviewed, the greater portion of the book is devoted to the microscopic algae, particular emphasis being placed on the culture and nutritional value of phytoplankton. From a practical standpoint, a particularly valuable section is that devoted to human and animal algal poisoning. This book can be recommended for its entertaining presentation and extensive bibliography.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

QUERIES AND MINOR NOTES

GAMMA GLOBULIN AND THE SALK VACCINE

TO THE EDITOR:—*A number of children to whom I had given two injections of poliomyelitis vaccine (Salk) were exposed to measles. Is there any reason to withhold a modifying dose of gamma globulin on the assumption that the antigenic effect of the Salk vaccine will be neutralized by the poliomyelitis antibodies contained in the present gamma globulin fraction?*

F. Richard Aron, M.D., Chicago.

ANSWER.—There is little reason to believe that the amount of gamma globulin used in the prophylaxis of measles will influence the antigenic effect of poliomyelitis vaccine. In fact, a paper by Brown, Rabson, and Craig (Studies with Poliomyelitis Vaccine Following Gamma Globulin and in Tuberculous Children, *Pub. Health Rep.*, to be published) shows that relatively large doses did not influence the response to vaccine. Moreover, it has also been shown that such doses do not limit the intestinal stage and the antibody response to that infection.

CAUSE OF PARALYTIC POLIOMYELITIS

TO THE EDITOR:—*In poliomyelitis, frequently the second phase of the "dromedary" temperature curve coincides with the appearance of paralytic symptoms. Since this is about the time of an expected maximal antibody response in other virus diseases, one might by conjecture implicate the presence of antibodies in the causation of paralysis. I have been unable to find in the literature work that might disprove this hypothesis. Is there an experiment that proves that these antibodies are not neurotoxic?*

H. M. Rodney, M.D., Spokane, Wash.

ANSWER.—The second phase of the dromedary-type reaction is due to invasion of the central nervous system and the establishment of a second infection site; the first being the systemic infection. The cause of paralysis is the virus in the central nervous system and not the antibody in the serum.

PROPHYLAXIS OF IVY POISONING

TO THE EDITOR:—*What is the present status of the prophylactic administration of poison ivy extracts? Ever since the article describing two cases of acute glomerulonephritis following administration of Rhus toxin reported in* THE JOURNAL, *Aug. 25, 1951, page 1570, I have refrained from using this substance. Has there been any further study or investigation in this field? Are there any other preventive measures that can be taken in the extremely sensitive person?*

Harold J. Sargent, M.D., Newfoundland, N. J.

ANSWER.—An extensive study of the use of pentadecylcatechol in prophylactic hyposensitization of persons sensitive to poison ivy has been in progress for the past two years at the University of Pennsylvania Medical School. This material has been shown by others to be one of the catechols that constitute the active allergen in poison ivy. The results of this study were reported by Kligman at the meeting of the Academy of Dermatology in December. The use of pentadecylcatechol in producing hyposensitization should be restricted to persons who are exceedingly sensitive and who have repeated bouts of severe poison ivy dermatitis. In such persons the initial doses must be very small if local or systemic reactions are to be avoided, and the injections must be continued over a period of at least two months. Kligman's studies have shown unquestionably that significant hyposensitization may be produced in this way. The difficulty with extracts prepared from the poison ivy leaves themselves is that there has been no method of standardizing them, and the results obtained are therefore exceedingly variable. Pentadecylcatechol is not yet available through commercial channels. Although such material, or extracts of the poison ivy leaf, is distinctly contraindicated in the treatment of active poison ivy dermatitis, there is no indication that prophylactic administration carries any risk of producing glomerulonephritis.

DUODENAL ULCER

TO THE EDITOR:—*Please discuss the use of desoxycorticosterone in the treatment of duodenal ulcer. I have in mind a 74-year-old woman who has had severe ulcer symptoms for 20 years and at present shows narrowing of the second part of the duodenum by x-ray, along with a duodenal ulcer of this area. The narrowed passage is somewhat larger after withdrawing the residue of the stomach every night and irrigating it with a weak epinephrine solution. The patient's symptoms are difficult to regulate with diet. Banthine and Pro-Banthine cause stomach dilation and nausea and vomiting.*

John R. Schmidt, M.D., Asuncion, Paraguay.

ANSWER.—The treatment of peptic ulcer with desoxycorticosterone acetate is based upon an assumption, for which there is no satisfactory evidence, that adrenal hypofunction is a major factor in the development of the disease. Scattered favorable reports have appeared in the foreign literature, but the results are not convincing (Kirsner, J. B.: Hormones and Peptic Ulcer, *Bull. New York Acad. Med.* **29**:489, 1953). This consultant would not recommend its use. In the case in question, a strict medical regimen consisting of hourly doses (from awakening to bedtime) of calcium carbonate powder, 2 gm., alternating with magnesium carbonate powder, 2 gm., as necessary to control constipation, and nightly aspiration might be helpful. Three small bland meals daily and mild sedation could be added to the program. Antispasmodic drugs are contraindicated in the presence of obstruction. A gradual decrease in the quantity of nightly aspirant would be the best guide of improvement. If, however, the obstruction is caused by cicatrization rather than edema and spasm, medical therapy will probably be to no avail and surgery will be necessary. A gastroenterostomy and vagotomy would seem to be the operation of choice in this elderly patient.

RESTORING AMPUTATED PORTIONS OF FINGERS

TO THE EDITOR:—*Please give information relative to restoring the traumatically amputated portions of fingers.*

J. H. Robbins, M.D., Athens, Ga.

ANSWER.—Technically, this can be done, but, practically, it is rarely satisfactory. When one remaining digit needs a mate on which to work for prehension, there is value even if the new digit is made from abdominal skin. Abdominal skin does not furnish stereognosis. In the main, however, unless one can furnish stereognosis to the new digit there is little practical value, as sensation is equal to motion in evaluation. At times, a normal skin flap can be used to cover the tactile part of the new digit. If so, this digit will have stereognosis and so will be useful. A normal digit can be transferred from the same or another hand, but the nerves and tendons should be joined to give sensation and motion. This is difficult but possible. It may be mutilating, and even so the new digit will have an annular scar, which means poor nutrition. It is far more practical to restore a new digit by a pedicle method so as to transfer sensation, vascularity, and motion. This frequently applies to furnishing a thumb from a part or the whole of the index finger. Even a neurovascular pedicle without a skin bridge can be used, but tendons should be transferred or rejoined. As for building out a digit just for cosmetic reasons, there is little to recommend it.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

CORNEAL TRANSPLANTATIONS AND EYE BANKS

To the Editor:—*How many corneal transplantations are done annually in the United States? If possible, I would like to have a breakdown for the last five years. How many eyes are collected by eye banks in the United States annually during these past five years? Is there a waiting list available of people who need corneal transplants who have not had them done because of the unavailability of suitable eyes at eye banks? The reason for the questions is a contemplated drive by the Lions Clubs of Connecticut to provide funds for eye banks and publicity by the American Red Cross and other agencies for the same purpose.* *M.D., Connecticut.*

Answer.—The national eye bank (the Eye-Bank for Sight Restoration, Inc., 210 E. 64th St., New York) was founded in 1945. During this period about 6,500 eyes have been donated from persons all over the country and distributed to qualified ophthalmologists throughout the United States (with the exception of the West Coast). Annually, the number of eyes received increases as the eye bank's national educational program increases. The estimated number of people who are blind, or have impaired vision, and could be helped by corneal transplants in the United States was given at the fall, 1955, meeting of the American Academy of Ophthalmology and Otolaryngology as 20,000. The eye bank urgently needs the support of individuals and clubs, both in signing its eye donor pledges and in financial aid. Sight will be restored in direct proportion to the number of eye donor pledges signed and to the financial aid given to this organization, which has affiliated eye banks, or clearing houses, in Boston, Chicago, and Winston-Salem, N. C. More affiliated eye banks are planned as the eye bank's new enlarged national program gets under way. The American Red Cross Motor Corps throughout the country aids the eye bank's work by rushing eyes to and from hospitals, airports, and other places, wherever needed.

WOOD'S LIGHT

To the Editor:—*Is filtered ultraviolet light (Wood's light) of value in diagnosing skin disorders, and if so in which? I use it to facilitate the diagnosis of fungus infections of the hairy scalp. Can it be used to recognize epidermal zoonosis, pediculosis, and nits?* *M.D., New York.*

Answer.—Wood's light is used to detect ringworm fungi in diseases of the hair, but it does not detect all types of fungi, and its value in distinguishing fungi is limited. Its chief use is in recognizing the Microsporum in infected hairs, which emit a bright greenish fluorescence. Hairs infected with the Trichophyton schoenleini emit a variable degree of fluorescence, and the fluorescence of Trichophyton-infected hairs is either absent or so faint as to be almost imperceptible. The Wood light can be used to recognize only fungus infections when involving the hair shaft itself. It will not bring out pediculosis or nits well enough to distinguish them and will not distinguish epidermal zoonosis.

SWEATING BLOOD

To the Editor:—*Is it possible for a person under severe stress or emotional strain to sweat blood as a natural phenomenon? Are there any natural disease processes or situations where blood might appear on the surface of the intact skin and thus be interpreted as "sweat?"* *M.D., Pennsylvania.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—It is physiologically impossible to sweat blood, even though under conditions of emotion, especially sudden embarrassment, the vessels of the face and neck may become greatly engorged even to the point of causing petechial hemorrhages, but these are always subcutaneous and do not involve outright bleeding.

Answer.—Sweating blood in any ordinary sense is not likely, even under the most severe stress or emotional strain. The sweat glands are surrounded by blood vessels and a capillary network, but it is unlikely that any blood could escape into the secretion from the sweat glands unless there would be sufficient trauma or abrasion to break the blood vessels or unless there were a marked deficiency of ascorbic acid and vitamin P, with resulting extreme capillary fragility, so that scurvy spots appeared on the skin. The only natural disease process in which blood might appear on the surface of the skin to be interpreted as "sweat" would be in extreme scurvy.

"HUNDRED YEAR OLD EGGS"

To the Editor:—*The Chinese consider "hundred year old eggs" a delicacy. Recently it has been discovered that such eggs may be simulated by immersing fresh eggs with shells in a 3% solution of sodium hydroxide for a period of four to six weeks. The egg white becomes a dark brown, transparent, gelatin-like substance, while the yolk solidifies to either a pasty or firm mass. These eggs are eaten raw. Are they harmful?* *Ling G. Wong, M.D., State College, Pa.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—The treatment described would doubtless cause denaturation and partial hydrolysis of proteins and formation of gelatinous alkali metaprotein. The sulfur-containing amino acid cystine would probably be partially degraded to form sodium sulfide, a toxic salt. In the acid of the stomach this salt forms hydrogen sulfide, a poisonous gas that is readily dissolved and absorbed in the small intestine. In the unlikely event that all of the cystine in a hen's egg were converted in this way, about 90 mg. of sodium sulfide would be produced. This is not enough to cause trouble if taken at infrequent intervals. Hydrolysis of mucoid material in the egg would liberate simpler carbohydrates that might combine with certain amino acids to account for the browning reaction. Some of the lipids might be saponified. In general, the treatment is in effect a step toward digestion of the egg, but the formation of sodium sulfide, a nonvolatile toxic material, makes it undesirable. Since sulfides are rapidly oxidized in the body and have no cumulative effects, it seems likely that the occasional ingestion of one of these alkali-treated eggs would not be very harmful.

Answer.—Contact of proteins with dilute alkali induces a series of poorly defined chemical reactions. The resulting slight changes in the protein molecule lead to alterations in the physical properties of the protein, particularly changes in the solubility. The derived proteins so formed may be classified as proteans or metaproteins. The process described of treating eggs with solution of 3% sodium hydroxide probably induces such a change. Without observational data to define the degree of penetration of the sodium hydroxide into the shell of the egg, and a study of the resulting chemical reaction, it would be impossible to state clearly the exact nature of the chemical changes induced in the egg. If the process is sufficiently controlled that it does not result in a distinctly alkaline egg (pH greater than about 8), one would expect no harm from the alkali per se. Whether alterations in nutritive value occur would have to be ascertained by analysis and study of the product. If sodium hydroxide is to be used in such processing, it should be carried out with proper attention to the dangers that may arise from accidental poisoning from lye, especially among young children. Attention recently was called to this danger in The Journal (**159:**1541 [Dec. 17] 1955).

DIATHERMY AND ULTRASONIC ENERGY

To the Editor.—*What are the relative values of diathermy and ultrasonic energy in the treatment of bursitis, fibrositis, myositis, and similar conditions?*

W. S. Douglas, M.D., Lewiston, Idaho.

Answer.—If properly applied, shortwave and microwave diathermy bring about the mass heating of tissue whose blood supply is intact. Blood vessels, fascia, and nerve tissue, for example, are not heated, one in any significant excess of the other. However, in the case of ultrasonic energy used in therapy, there is heating of specific types of tissues and at interfaces.

Interfaces occur when tissues of different densities join, such as muscle with fascia or fat with skin or muscle. In addition, bone and nerve tissues are exceptionally well heated by ultrasonic energy. The tendency for excessive heating to occur in certain tissues and at interfaces calls for considerably more care and caution in the application of ultrasonic energy than are required when shortwave and microwave diathermy are applied. Thousands of reports have appeared in the literature on the use of ultrasonic energy, but they tend to be based more on clinical impressions and opinions of authors than on controlled studies comparing this physical agent to other forms of diathermy. It is difficult, then, to assess the relative values of these physical agents at this time. A controlled study was conducted, comparing the combination of ultrasonic energy, massage, and therapeutic exercise to the use of microwave diathermy, massage, and therapeutic exercises in the treatment of periarthritis of the shoulder (Lehman, J. F.; Erickson, D. J.; Martin, G. M., and Krusen, F. H.: *Arch. Phys. Med.* **35**:627-634 [Oct.] 1954). A statistical analysis of the results of treatment of these cases showed that the patients receiving ultrasonic energy, massage, and therapeutic exercise to the shoulder responded somewhat better in terms of decreased pain and increased range of shoulder motion than did those receiving microwave diathermy, massage, and therapeutic exercise.

BOXING

To the Editor:—*Is there a list of physical standards recommended for individuals who participate in boxing matches? A male patient, engaged in amateur boxing matches, has amblyopia ex anopsia of the left eye with normal vision of the right eye. Amateur rules are to be followed, and amateur-type gloves are to be used.*

James K. Gray, M.D., Trenton, N. J.

Answer.—There does not appear to be uniformity in physical standards from state to state or among the various groups that sponsor boxing. The usual requirements are general—a thorough examination by a physician, with details left to the examiner. In some instances one-eyed boxers and those suffering from defective sight or ocular disease are barred by specific rule. A person who, for all practical purposes, has no vision in one eye should not be allowed to box; his ability to defend himself would be impaired. Also, the possibility of loss of vision in the remaining eye is considerable. Doggart (Impact of Boxing on Visual Apparatus, *A. M. A. Arch. Ophth.* **54**:161-169 [Aug.] 1955) describes three types of derangement of the visual apparatus from boxing: (1) ocular damage; (2) injuries to neighboring structures, including the ocular adnexa; and (3) lesions of the visual pathways and other parts of the brain.

WHERE TO LOCATE A PEEP SIGHT

To the Editor:—*Is there an ideal distance that a peep sight should be located from the eye for rifle shooting? I am 48 years of age and use bifocals. I would like to change to a peep sight but do not know where to locate it on the gun for quick aiming.* *John C. Clark, M.D., Asbury Park, N. J.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—There is no ideal distance that a peep sight should be located from the eye. The consensus is that the only object of the small, round hole in the metal disk placed on the receiver and known as the rear sight is to enable the marksman to line up the front sight on a distant target. It is not possible to focus on the rear sight and on the target at the same time. One must remember to focus through the distance lens and not attempt the impossible by trying to focus through the lower portion of the glasses.

Answer.—The usual position of the peep sight is just above the trigger. If an "open-iron" sight is used instead, this is on the top of the barrel, about 10 in. in front of the trigger. The front sight is at the end of the gun barrel. The inquirer must choose between having the peep sight, the front sight, or the target in clear focus. By far the most important is the target. Therefore, he should use his distance correction in shooting and ignore the bifocal addition. Thus, he will have a blurred (but adequate) image of the peep sight, a somewhat better image of the front sight, and a clear vision of the target. A blurred view of the peep sight is sufficient to line up the target accurately.

VENTRAL HERNIA AFTER SURGERY FOR EMPYEMA

To the Editor:—*A 35-year-old man, 20 years ago, had empyema of the lung, which was drained four times that year. Complications developed, and he was operated on again twice. The thoracic cavity was irrigated for several weeks, and the infection finally cleared up. During the surgery, damage to the intercostal nerves was complete. Now, he has a progressing ventral hernia that measures 10 by 18 cm., with the longer axis extending from the rectus muscle laterally to the anterior axillary line. He has complete atrophy of the overlying abdominal muscles, which includes some involvement of the right rectus muscle. He has considerable discomfort due to sagging of the liver and at times even has a mild increase in the icteric index, with a level as high as 14.5 units on one occasion. A thoracic surgeon recommended a belt support, and the patient improved remarkably for a short while; however, now he has more pain and marked tenderness to the liver after his day's work as a truck driver. He feels so badly that he would welcome any type of relief. The patient is a good surgical risk, having regained about 60% of lung capacity on the right side. Would a tantalum mesh procedure be satisfactory?* *M.D., Kansas.*

Answer.—The extensive paresis of the upper abdominal muscles described in this case is one of several undesirable sequelae of radical rib resection involving the intercostal bundles, as carried out in the Schede procedures for chronic empyema. Once established, there is no adequate therapy; some type of elastic belt or upper abdominal corset may give relief. Reinforcement of the abdominal wall with metallic or plastic mesh is not advisable, since the problem is not that of hernia but of a generalized atrophy of the unilateral abdominal musculature. One should make certain by a repetition of the appropriate studies that the patient has no disease of the gallbladder, stomach, or right side of the colon, which would be capable of producing the symptoms ascribed to this neuromuscular lesion including the mild jaundice.

ASTHMATIC ATTACKS DURING MENSTRUATION

To the Editor:—*For several years a 33-year-old woman with two children has regularly developed asthmatic attacks at the time of her periods. These attacks last several days, completely disabling her, and become almost intractable to any form of treatment. A few months ago I began giving her moderate doses of Premarin with methyltestosterone about midway in the cycle to suppress ovulation and produce an "artificial" period. For the next two months she did not have the least bit of trouble. During the third month that therapy was given some mild symptoms developed. When use of the hormone was discontinued she again had very severe asthma. What should the future course of therapy be? Generally it is considered unwise to suppress ovulation more than three months. Would a curettage be worthwhile? The patient's mother, incidentally, had similar attacks until her uterus was removed, when they stopped completely. Would such radical treatment be justified, in view of the fact that the patient loses nearly half a month 12 months out of the year from total disability? The patient is desperate for help.* *M.D., Texas.*

Answer.—In view of this woman's history, elimination of ovarian function by oophorectomy or by radiation would almost surely prevent the asthmatic attacks that occur cyclically. However, this type of treatment is too drastic and entirely unnecessary at this time because of the patient's youth. A curettage would almost certainly not prevent the asthmatic episodes unless there was suppression of ovarian function, which is hardly likely after a curettage. Ovulation should be suppressed either by estrogens or androgens. Diethylstilbestrol is less expensive than most other estrogens and can be used effectively. Generally, a 1 mg. tablet every night for 15 nights beginning the first night of the

menstrual flow will suppress ovulation, but not menstruation. If diethylstilbestrol produces disagreeable symptoms such as nausea or abdominal pain, other oral preparations like Premarin should be used. In many cases androgens also suppress ovulation. A 10 mg. tablet of methyltestosterone should be given three times a day for eight days before the estimated ovulation day. This amount of androgen given orally will rarely induce virilizing effects, but the cost is greater than that of diethylstilbestrol. There is no need to give combined estrogen and androgen therapy unless for some reason this appears to suppress ovulation in this patient more regularly than either estrogens or androgens alone. There is no harm in preventing ovulation for long periods of time, even for a year or more. One form of medical treatment of endometriosis is based on suppression of ovulation for many months at a time by large doses of estrogen. In nearly all cases, menstruation returns after discontinuing the estrogen therapy. In this patient it would be advisable to stop the hormone therapy after six months to see if the asthmatic attacks will be absent without therapy. If, after several series of hormone treatment, the asthmatic attacks recur without, or in spite of, the therapy, stopping ovarian function permanently will be justified. Fortunately, the patient has two children.

TRAUMA AND REACTIVATION OF TUBERCULOSIS

To the Editor:—*I would like information concerning the activation of pulmonary tuberculosis as a result of trauma. I am of the opinion that such a situation would be very unusual, but at present I have two cases, one in which I feel trauma definitely resulted in reactivation and the other in which I feel strongly the other way. I would appreciate information that might help.* *M.D., Florida.*

Answer.—There are two pathways by which tuberculosis may be activated through trauma. A quiescent, encapsulated, caseous focus may be ruptured by injury and thus spread the living bacilli, frequently present in such foci, to the surrounding tissues. They may even be sucked into ruptured veins or capillaries and cause hematogenous tuberculosis. The permeability of capillaries in the inflammation at the site of injury is increased, and tubercle bacilli, which may circulate in the blood from time to time in cases of pulmonary tuberculosis, may escape into the tissues in these areas, the so-called loci minoris resistentiae. These are authenticated conclusions that apply not only to tuberculosis but to other infectious agents as well. An excellent discussion of this subject, as well as pertinent references, is given in "The Pathogenesis of Tuberculosis," by Dr. Rich (ed. 2, Springfield, Ill., Charles C Thomas, Publisher, 1951, p. 638). Another factor that may be of significance in this relation is the fact that trauma, a stressful situation, if long continued and of sufficient intensity, is associated with a great outpouring of the adrenocortical hormone, hydrocortisone. The activating influence of the latter on latent tuberculous infection is well known. However, in any given situation, the special conditions that obtain must be considered to determine whether trauma is responsible for activation of pulmonary tuberculosis.

RADIOACTIVE ROCKS IN LIVING ROOM

To the Editor:—*A man whose hobby is studying radioactive rocks keeps samples of rock in his living room in a lead box but often takes them out and puts them on the floor to examine them. How little radioactivity is necessary to affect his 7-month-old twin grandchildren who play on the floor? The reading on the Geiger counter is 0.4 over the entire floor. Is this amount of radioactivity dangerous to the infants?*

Hobart T. Feldman, M.D., Allentown, Pa.

Answer.—The reading of 0.4 on the Geiger counter would be meaningful in terms of radiation dosimetry only if the kind of instrument and the units on its meter were known. It would be helpful also to know the way the instrument was used. Nevertheless, there seems to be some radioactivity on the floor, presumably in the form of inhalable dust. Most samples of radioactive rocks do not emit a large enough amount of radiation to deliver a large total body dose. Inhalation of their dust, however, could introduce into the body some exceedingly long-lived isotopes of such elements as uranium, thorium, or radium. These may localize preferentially in bone, particularly growing bone. Therefore, the conservative things for the physician to do are as follows: 1. Send urine samples from the twins to Dr. John H. Harley, Head, Analytical Branch, U. S. Atomic Energy Commission, New York District, 70 Columbus Ave., New York, who will test them for uranium isotopes. 2. Instruct the family to thoroughly clean the floor by means of a vacuum cleaner provided with a new filter and by means of a heavy detergent. If detectable radioactivity still remains, application of varnish, paint, or wax will fix it in place and will provide shielding from short-range radiations. 3. Discourage the man from further exposing the twins to radioactive materials.

VARICOSITIES OF VULVA

To the Editor:—*Please send me information on varicosities of the vulva. Do they cause pain?*

J. W. McHugh, M.D., Johnstown, Pa.

Answer.—Varicosities of the vulva occur as a result of venous insufficiency of the pelvic veins that drain into the uterine veins and plexus or directly into the hypogastric veins. During pregnancy they enlarge to a great extent and may bleed at birth, although this is an infrequent complication. Vulval varicosities are usually painless unless thrombosed, but the pelvic phlebitis, which is the most frequent cause of the varicosities, does produce an obturator type or sciatic or femoral type of neuralgia. Vulval veins may be injected with a sclerosing solution, excised, or left alone. Generally speaking, they markedly shrink after delivery of a child, and, since their origin is invariably due to uterine or hypogastric valvular incompetence, they cannot really be logically attacked except during a pelvic laparotomy. A feeling of heaviness may be alleviated by an athletic supporter into which cotton or sanitary pads can be placed for application of pressure.

EXPOSURE TO FUMES OF SOLVENTS

To the Editor:—*Two of my patients are employed in the plastic industry; one working with monomeric methyl methacrylate and the other with toluene diisocyanate. Kindly describe the toxic effects, if any, that may result from acute or chronic exposure to fumes of these solvents and advise what precautions should be taken. Also state what studies are advisable to detect toxic effects.* *M.D., New Jersey.*

Answer.—The harmful actions of monomeric methyl methacrylate and toluene diisocyanate may be similar, but effects from the latter are more severe and better established. These agents may be constituents of certain synthetic resins and enter such products as synthetic lacquers and foam rubbers. Swensson and others (*Brit. J. Indust. Med.* **12**:50, 1955) observe that the diisocyanates with relatively high vapor pressures are physiologically highly active. These authors provide the following summary of their own observation: "A number of isocyanates which are used for the production of certain lacquers may cause symptoms of irritation from the mucous membranes of the eye and the respiratory passages. In addition to this, sensitization may occur whereby renewed exposure will give rise to regular asthmatic attacks." From an unpublished investigation in the United States, it appears that toluene diisocyanate provokes a profound bronchitis associated with paroxysmal asthmatic attacks that are prolonged and resistant to treatment and of such severity as to require hospitalization. It appears that this isocyanate may be an active allergen. It has been suggested that the maximum allowable concentration be fixed at 0.1 ppm of air, but so severe a standard now has no formal recognition. Swensson and others, in the same article referred to above, state, "Owing to the irritating effect of 'desmodur T' [a mixture of 60% *m*-toluene diisocyanate and 40% *p*-toluene diisocyanate] upon the mucous membrane it is important to take adequate precautions. This is the more necessary in view of the sensitizing capacity of the substance. In spray-painting in a spray-booth the face-velocity of the air commonly used with ordinary paints should probably be considerably increased. Preferably, an air-line respirator should be used. In brush-painting out of doors there is probably sufficient ventilation, but in indoor work respiratory protection is desirable, at least in bigger jobs and

on prolonged work. In connection with the cases of poisoning described we did not carry out any air analyses to determine the content of 'desmodur' in the atmosphere. It is, however, a fairly simple matter to determine the number of reactive NCO-groups by coupling to a secondary amine in a suitable solvent, e. g., chlorobenzene. Unconverted amine may thereafter be back-titrated with hydrochloric acid (Bayer, 1947). The value of air analyses appears to us to be limited in view of the sensitizing capacity of the isocyanates." In view of the presumed profound sensitization action of these substances, full protection becomes almost impossible. In some industrial pursuits difficulties may be avoided by completely enclosed systems. Manifestly, this is impossible in spray-coating operations. The publication cited affords eight references chiefly in German.

LOSS OF HAIR

TO THE EDITOR:—*A 35-year-old woman has thinning out of her hair, with removal of moderate amounts on combing. There is regrowth at a slow rate. She has no evidence of any general symptomatology such as blood or skin disease or endocrine disorder. She had a questionable adenoma of the thyroid removed (hemithyroidectomy) many years ago. Can you suggest any treatment that may decrease this hair loss?*

M.D., New York.

ANSWER.—There appears to be an increase lately in the number of women who experience general loss of scalp hair. Unfortunately no cause for this has been determined, even though the usual causes as endocrine unbalance, recent infections, drug ingestion, postpartum state have been considered. More often than not there is the history of its being a family trait. The patient should be studied thoroughly by every means in case there should be some abnormality, for such loss of hair usually has a most depressing affect. Topically, finger massage, good scalp hygiene, and the application of a "scalp lotion" usually makes the patient feel better. It is assumed that the patient's shampoo was ruled out as a causative factor.

THE PRICE OF NEW DRUGS

TO THE EDITOR:—*Why does not someone in authority question the cost of new drugs and medications? Why should cortisone products, made cheaply from the Mexican yam, cost the patient 30 to 35 cents a tablet? Why should the broad-spectrum antibiotics still cost 50 to 60 cents a capsule of 250 mg.? I am sure that, after the initial cost of developing these drugs, they are inexpensively made, but the price has not come down after the initial reduction three to four years ago. These are only two instances where a price reduction would give the patients a lift with no hardship to the producers.*

M.D., Pennsylvania.

ANSWER.—Price reductions depend on two factors—volume production and volume sales of the product. Until both have been achieved, the marketing of the product must remain "expensive." One pharmaceutical manufacturer, who has had pharmacy schools audit 200,000 prescriptions filled in 250 stores in representative areas of the nation, reports an average prescription price of $2.51 for the first six months of 1955. In contrast, a new specialty product in the field to which the physician inquirer refers was introduced in February, 1955, and the present average prescription price of this product is $8.08. The same survey showed that 80% of all of the 200,000 prescriptions were sold at $3 or less per prescription. It may be that Mexican yams are cheap, but, as regards cortisone products, one large reputable pharmaceutical manufacturer gives as one of his reasons for not entering that field, "the extremely complicated and expensive manufacturing process for that product." The U. S. Department of Commerce gives the amount spent by consumers in 1954 for "drugs and sundries" as $1,631,000,000, or $10.12 per capita, and the results of the prescription survey referred to above indicate that about $6.43 of that per capita amount is for prescriptions. Either sum seems rather insignificant when compared with consumer per capita expenditures for alcoholic beverages of $55 in 1954. A further indication that prescription prices are not, on the whole, out of line is that the price index for prescriptions in 1954 was 115.8 as compared with 114.8, the index for all consumer goods and services. The index for prescriptions is one of 20 available subindexes that make up the group index for "medical care and drugs," which was 125.2 for 1954. For two other main items in this medical care group—physicians' fees and hospital room rates—the indexes were 119.1 and 156.9 respectively. The one is slightly higher than the index for prescriptions, and the second is very much higher. While these data do not serve to answer the reader's specific inquiry, they do serve to give perspective. The pharmaceutical industry is as highly competitive as any that can be named. This industry is very much aware that the physician-patient relationship is such that the physician does consider the matter of price if there is any choice open to him in selecting prescriptions. All of the evidence is that this severe competition forces the industry to do almost as much research to achieve cheaper production and marketing as it does to develop the new, or better, products to which the inquirer refers. As soon as just one producer of these products is able to produce and market them more cheaply, he will certainly do so, with the object of forcing his higher priced competitors out of the market. This will cause other producers to accelerate efforts to improve their own production and marketing techniques. Further price cuts, with eventual stabilization at a lower level, will be the result. Penicillin, streptomycin, and cortisone have all had price histories that seem to demonstrate the validity of this conclusion.

VERTIGO

TO THE EDITOR:—*What is satisfactory treatment for acute proxysmal labyrinthine vertigo?*

Joseph V. Waitkunas, M.D., Woodhull, Ill.

ANSWER.—During an acute labyrinthine vertiginous attack, certain sedatives such as Bonamine, Dramamine, or Thorazine have been found useful in alleviating the symptoms. Where there are recurring attacks of vertigo, an effort should be made to determine the cause, which is most often Ménière's syndrome. Medical treatment with a low-salt diet, potassium chloride, and a vasodilator such as nicotinic acid should be tried. Histamine given intravenously according to the method of Horton or in small subcutaneous doses according to the method of Hansel is effective in some cases. Rarely, in unilateral Ménière's syndrome with incapacitating vertigo that is not controlled by medical means, it may become necessary to destroy the vestibular function by the Cawthorne membranous labyrinthectomy or section of the eighth nerve.

EFFECT OF CORTICAL COMPOUNDS ON URINARY CORTICOIDS

TO THE EDITOR:—*Does the administration of cortisone or prednisone preparations or corticotropin affect the urinary value of corticoids or 17-ketosteroids?*

Martin N. Frank, M.D., Glenside, Pa.

ANSWER. — The administration of cortical compounds is followed by a marked increase of urinary corticoids and a smaller increase of the urinary 17-ketosteroids. Cortisone and prednisone lead to relatively high increases in corticoid excretion in the urine, while the 17-ketosteroids may not be increased if these substances are administered in relatively low doses. A dose of at least 100 mg. or more of cortisone is required to elevate the 17-ketosteroids. When the concentrations of cortisone and prednisone are greatly increased, both urinary-corticoid and 17-ketosteroid excretion are increased. Corticotropin regularly increases urinary corticoids and 17-ketosteroids, but not at the same rate, and only in the presence of a functional adrenal gland. In the presence of virilizing adrenocortical hyperplasia, the high levels of urinary 17-ketosteroids are significantly decreased by administration of cortisone and related compounds, while corticotropin raises the urinary 17-ketosteroid levels. The relatively low increase of the 17-ketosteroids after the administration of cortisone and prednisone is due to the fact that the endogenous production of 17-ketosteroids may be decreased by virtue of pituitary inhibition, while the action of corticotropin in hyperplasia may be due to the suppression of corticotropin secretion and consequent suppression of adrenocortical secretion.

RELIEF OF CONTRACTURE OF PARALYZED LIMBS

To the Editor:—*What treatment will relieve the spastic contracture of voluntary muscles seen after inactivation of the affected limb after a severe cerebral accident?*

R. J. Kent, M.D., New York.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—The treatment to relieve the contracture of the paralyzed extremities following a cerebral vascular episode should begin immediately. Treatment of this condition should not be allowed to wait until contracture has developed. With passive manipulation a full range of movement at all affected joints should be obtained several times a day, and as soon as active movement is possible the patient should be urged to use this as frequently as possible and to the fullest possible extent. The patient should also be urged to undertake his own passive manipulation of the paralyzed extremities with his normal arm. The amount of recovery that can be brought about by this means is truly amazing if manipulation is carried out continuously and intensively. The purpose of this is to obtain useful extremities, but of almost equal value is the avoidance of the painful joints that appear when contracture is allowed to develop. Except for the very aged and debilitated patients, almost all individuals who have suffered from a cerebrovascular accident should recover sufficient control of their lower extremity to enable them to walk without aid. The recovery of the upper extremity is usually less than that of the lower extremity, but even so useful movements are often obtained. Although physiotherapists are helpful in this form of treatment, they are actually little more than an adjunct. The patient and his family can, if they will, accomplish everything that the physiotherapist can, and, as they are with the patient much more continuously, they can actually do much more. The patient should always be told that he is not to rely on the physiotherapist for this treatment but that the physiotherapist is merely to act as an instructor and a stimulus. Drugs and special forms of treatment are of little or no value.

Answer.—Many of the newer antispasmodic drugs have been tried on patients with this type of spasticity with little or no benefit. Active functional use of the extremity preceded by stretching usually benefits the patient. This must be carried on for a long period of time; that is, months rather than days or weeks. If the spasticity of the lower extremity is severe, the patient should be braced and the brace locked up tight. The patient should be taught to walk, releasing one joint at a time as he becomes more proficient.

REPEATED ERYTHROBLASTOSIS

To the Editor:—*Can repeated transmission of erythroblastosis fetalis be considered adequate grounds for tubal sterilization of a married woman? I would appreciate any references related to the answer to this question.*

Harry Agress, M.D., St. Louis.

Answer.—Under certain conditions, giving birth to more than one erythroblastic infant may be considered adequate grounds for tubal sterilization of a married woman. This and related problems of medical, moral, and legal nature are discussed in the booklet "The Rhesus Danger" by R. N. C. McCurdy (London, England, William Heinemann, Ltd., 1950). In a case where an Rh-negative woman is very strongly sensitized to the **Rh**$_0$ factor and her husband is homozygous to the **Rh**$_0$ factor, and occasionally even if he is heterozygous, the couple may wish to avail themselves of the protection against additional pregnancies that sterilization affords. This eventuality may arise when the couple already has so many children that they feel that another pregnancy is not worth the risk, or where there has been a series of stillbirths and another pregnancy and stillbirth could jeopardize the mother's life or health. Before proceeding with the operation, however, the physician should assure himself of legal protection by calling a specialist in the field into consultation and by having both the husband and wife sign a release. The operation on a man is a trivial office procedure, while on a woman the operation is even less dangerous than an appendectomy. Since sterilization is generally irreversible, one must bear in mind that, if the marriage terminates by divorce or death, remarriage with a spouse of a compatible Rh type could eliminate the dangers of Rh sensitization.

FRAGILITIS OSSIUM

To the Editor:—*I would like information on how to deal with a 3-week-old child who has congenital fragilitis ossium. Please discuss plan of management at home, institutions that might be interested in this child for study and management, and institutions dealing with the nursing aspects of such a child. This male child was born with old multiple fractures and with callus formation of both femurs, ankles, ribs, head of left humerus, and midshaft of the right radial bone.*

M.D., Georgia.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—Fragilitis ossium is a congenital and familial disease. The cause is not known, and there is no treatment. The only plan of management is the avoidance of trauma, and children with this condition incur osseous fractures with great ease. Should a fracture occur, immediate orthopedic management is necessary. Healing is usually satisfactory, and deformity may be prevented by proper orthopedic handling. I know of no institution particularly interested in this type of case. The clinical director of the National Institute of Arthritis and Metabolic Diseases states that they have in the Clinical Center a 7-year-old girl with this disease. They are conducting an investigation but to date have nothing to offer. The director of that institution knows of no other institution that would be definitely interested in the study or management of a child of this age with this condition.

Answer.—The treatment of these children must be individualized from the standpoint of both severity of involvement and the attitude of the family. The description of this boy indicates that his skeletal system is markedly involved. The prognosis depends upon associated congenital anomalies and the defects found in the bones themselves. When dealing with such a child at home, gentleness is the watchword. By this, it is not implied that the child is placed in bed and not moved. He can be held and shown affection. He can be allowed to move about in bed or in a protected area on the floor, but only with care. Fractures often occur, but in most instances they can be treated with the support of a pillow or soft cushion. The fractures always heal readily. There are no institutions known that will accept these patients for domiciliary care. During the past eight years many of these children have been admitted to hospitals for surgical procedures designed to give greater stability to their long bones. The procedure of choice is a fragmentation, realignment, and intramedullary rod fixation operation. Fragmentation is to permit realignment for the correction of whatever deformities are present, and the intramedullary rod is for stability. Surgery is done at a time when the child has reached an age and stage of development commensurate with the use of a general anesthetic. After the surgical procedures these children have either been self-sufficient or have been stabilized enough so that extreme care is no longer necessary.

PENICILLIN ON AN EMPTY STOMACH

To the Editor:—*When giving penicillin orally, is there any advantage in giving it on an empty stomach?*

T. N. Humphrey, M.D., Selmer, Tenn.

Answer.—The recent observations by Jones and Finland (Blood Levels from Orally Administered Penicillins G and V: Relation to Food Intake, *New England J. Med.* **253:**754 [Nov. 3] 1955) show that, when penicillin is given one-half hour after breakfast, the levels of the antibiotic in the blood are higher than when penicillin is given one-half hour before breakfast. Their data also indicate that the levels at four and six hours after the dose is given are generally higher when penicillin is given after breakfast. These studies were made with both penicillin G and penicillin V. With the latter penicillin, significantly higher and more prolonged levels were obtained. In fact, these

investigators suggest that "penicillin V may be superior to penicillin G for oral use in the prophylaxis and treatment of susceptible infections," and that "useful levels may be sustained during oral administration of penicillin V at intervals of four hours."

POSTPARTUM HEMORRHAGE

To the Editor:—*A cesarean section was done on a 32-year-old para 4, gravida 5 woman for a placenta previa centralis. Following removal of the placenta, intractable bleeding was encountered from the lower uterine segment, which resulted in a hysterectomy being performed. At the time of surgery, the uterine arteries were momentarily clamped at the level of the internal cervical os. This resulted in complete hemostasis at the time; and since the surgery it has been wondered as to what the ultimate fate of the postpartum uterus would be and if further pregnancies in this patient would be contraindicated were the uterine vessels sutured rather than a hysterectomy performed.*

Theodore W. Ling, M.D., Pontiac, Mich.

Answer.—In all likelihood, the temporary clamping of the uterine vessels would lead to no serious and permanent damage to the uterus. Years ago such a procedure was carried out through the vagina in serious cases of postpartum hemorrhage that could not be controlled by other methods. There are no data concerning subsequent child-bearing possibilities in these patients. Suturing the vessels would not result in serious uterine ischemia. In the patient under consideration hysterectomy was probably the procedure of choice, inasmuch as she had her family.

INSOMNIA

To the Editor:—*Has medical research found any means of eliminating waste products to allow patients with hardened head arteries to get more sleep?* *M.D., Massachusetts.*

Answer.—There is no evidence that the insomnia or troubled sleep so frequent in middle aged or elderly people is due to cerebral arteriosclerosis or associated with impairment of mental, perceptive, or motor functions of the brain. Nor is there any reason to believe this is associated with any difficulty in eliminating, from brain or body, any known waste products. It is noteworthy that many old people with insomnia, like the late inventor Edison, use the time made available by less need for sleep for highly effective mental activity. Others use alcohol and other sedatives to try to restore the youthful pattern of sleep.

"THIS WORMY WORLD"

To the Editor:—*In 1947 Dr. Norman R. Stoll published in the* Journal of Parasitology *(33:1-18 [Feb.] 1947) an article entitled "This Wormy World." He conservatively estimated the incidence of the important parasitic diseases of man for the world and for the major geographical areas. Since that time effective anthelmintics and antiprotozoal drugs have been developed and the population of the world has increased. I wonder whether a similar set of estimates could be drawn up for the world today. This would be of great assistance to many physicians.* *M.D., Michigan.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—There have been no surveys since 1947 on which one could pass any opinion regarding the present estimate of the incidence of various important parasitic diseases of man throughout the world. The estimate presented by Dr. Norman R. Stoll in 1947 took more than six months to prepare. I have discussed this with Dr. Stoll, and he has informed me that to his knowledge there are no recent figures that would help answer the question.

Answer.—Although many changes have occurred in our knowledge of parasitic infections since Dr. Stoll published his report, the over-all effect is relatively difficult to assess. It is true that certain countries have developed effective control of malaria, yet the total incidence of malaria throughout the world has not been materially reduced. This same conclusion must be reached in amebiasis, hookworm disease, ascariasis, Bancroft's filariasis, and schistosomiasis. In other words, although more effective diagnosis and antiparasitic drugs, as well as public health measures, have reduced one or more of these diseases in certain areas, the global situation has not radically improved. It would be difficult to prove these statements statistically, but they are generally agreed to by medical parasitologists and public health workers.

ASTHMA

To the Editor:—*Of what value would a Thorne adrenocortical response test for eosinophils be in a patient who has received corticotropin (ACTH) for three years for an intractable asthma associated with food and inhalant sensitivity. Corticotropin has been of much benefit, but in the past three months this combination has not been adequate. Prednisone was then used on alternate days when corticotropin was not used. This combination was of great assistance. More recently corticotropin therapy has been discontinued and prednisone used daily in divided dosage. Should a Thorne test be done under this circumstance?* *M.D., Kansas.*

Answer.—The adrenocortical response test would be of no value in the case described. If the eosinophils are suppressed by the corticotropin, they could not be further suppressed by epinephrine (Adrenalin). If eosinophilia is present now, the corticotropin effect is probably not elicited. The test could only be done after sufficient eosinophils are present, subsequent to removal of the hormones. On the other hand, the reliability of eosinophil response as a criterion of adrenocortical activity has been questioned. The actual output of corticosteroids, as measured by chemical determination, would be much more instructive.

BIFOCALS FOR MYOPIC CHILDREN

To the Editor:—*How frequently are bifocal lenses used for highly myopic conditions in children as a routine procedure?* *M.D., West Virginia.*

Answer.—As a routine procedure, bifocal lenses are used in the treatment of less than 5% of highly myopic conditions in children. Bifocals in highly myopic conditions in children may facilitate better near vision with less accommodative effort. However, they tend to cause presbyopia more prematurely.

TROPHIC ULCERS FOLLOWING HEAVY IRRADIATION

To the Editor:—*Please advise the method of treating trophic ulcers over the right chest and axillary region in a 55-year-old woman who had radical breast surgery and x-ray treatment 15 years previously. This patient is continually developing a lymphangitis in the skin of the chest wall surrounding the area of radiation and now has developed trophic ulcerations in the area. Her condition has been controlled fairly well with Neo-Cortef ointment for a time, but, with the development of the trophic ulcers, repeated attacks of infection with a spreading lymphangitis and systemic symptoms have occurred. Would such a person be a candidate for skin graft or other procedure that might tend to prevent further development of ulceration due to poor circulation in this area?* *F. W. Henke, M.D., Shawano, Wis.*

Answer.—Skin-grafting procedures in heavily irradiated areas consistently fail. Even pedicle grafts do not take because the after-effects of irradiation include endarteritis that extends through all layers of the irradiated tissue and no satisfactory base for a graft is available. When the irradiated area is on the chest wall little can be done except for local applications. Various antibiotic ointments such as penicillin, neomycin, and bacitracin are useful, changing from one to another every four to six weeks, as the bacterial flora of the ulcerated areas becomes resistant. Resection of portions of the chest wall has been done but is a formidable procedure.